THE UNIVERSITY
OF MICHIGAN
DEC 21 1960
BUSINESS ADMINISTRATION

Journal of Advertising Research

Vol. 1, No. 1 SEPTEMBER 1960

How Incentives and Subsamples Affect the Precision of Mail Surveys LESTER R. FRANKEL 1

Personality Characteristics of Purchasers ARTHUR KOPONEN 6

Exposure and Communication Measures of Outdoor Advertising in Britain BRIAN D. COPLAND 13

Differences Between Advertised and Medical Uses of Drugs ARTHUR A. DONE 18

FEDERAL STATISTICS IN ADVERTISING 22

RESEARCH IN REVIEW 23

PUBLICATIONS RECEIVED 28

EDITORIAL 32

Published by the Advertising Research Foundation

The
Journal of Advertising Resear...

is published by the Advertising Research Foundation and sent free to its members; non-members may obtain single copies from the ARF at $10 each.

solicits original papers. Reports of findings are favored over theoretical discussion. Manuscripts should be submitted in triplicate, double-spaced, with references, tables and figures on separate pages. Authors receive 50 free offprints. Letters of comment and criticism are also invited.

is intended for practitioners and users of advertising research. Limits on readers' time and journal space require that papers be as short as clarity permits.

is an open forum. Publication in it implies no endorsement of the writer's purpose, methods or views by the Advertising Research Foundation, its board of directors, or any of its committees.

is edited by the ARF Technical Staff:

Charles K. Ramond	Technical Director
Ingrid C. Kildegaard	Research Statistician
Gwyn Collins	Research Associate
Thornton C. Lockwood	Research Associate
George M. Shirey	Research Associate
Mary E. McMahon	Librarian
Joey Harris	Secretary

© 1960 by the Advertising Research Foundation, Inc.
3 East 54th Street, New York 22, N. Y.

Bus Admin
Bus Admin
Direct-Mail
10-12-60
84-66214

BUS. ADM.
LIBRARY
HF
5801
.J86

How Incentives and Subsamples Affect the Precision of Mail Surveys

LESTER R. FRANKEL
Audits and Surveys Company

This comparison of two mail surveys has found that a first mailing incentive increased not only the response to that mailing, but also the precision of estimates obtained from three mailings combined. The author goes on to derive a rule for selecting the most efficient proportion of non-respondents to subsample in repeated mailings.

RESEARCHERS KNOW THAT MONEY incentives and repeated mailings can increase the response to mail surveys. But the relationship between incentives and return rates varies from survey to survey, and can rarely be estimated in advance.

Recently we were able to compare the effects of two slightly different incentive programs. From this we have attempted to develop some principles which will guide the researcher in making the best possible use of incentives in future mail surveys.

Early in 1956, Alfred Politz Research, Inc., conducted a mail survey among a sample of subscribers to *Sports Illustrated* to estimate characteristics of them and their families. Since then, the circulation of *Sports Illustrated* has roughly doubled. It was decided, therefore, to undertake a study in January, 1960, to get up-to-date information about present subscribers. Erdos and Morgan was retained to handle the mailing and processing and Audits and Surveys Company was retained as the technical advisor. The same basic techniques were used as in the previous study in order to compare the characteristics of present subscribers with those of four years ago to see what changes, if any, had occurred.

The universe for both studies consisted of all families where one or more members had personal subscriptions to *Sports Illustrated* for about a month before the study was carried out. Households or people obtaining subscription copies through a business or institution were excluded from these studies.

Identical sampling procedures were used in both studies. Systematic samples from galley records were selected. These gave 9,528 eligible names in 1956, and 9,466 in 1960. Some topics were added in the 1960 Study and it was decided to split the sample and ask certain questions of half the sample only. Both questionnaires used in 1960 were comparable in length and complexity to the one used in 1956.

The mailing procedures for both the studies were the same. Basically, the procedure consisted of a mailing to all persons in the sample. After a suitable period this mailing was closed out and one-half of the non-respondents received a second mailing with an incentive. After this mailing was closed

LESTER R. FRANKEL is executive vice president of the Audits and Surveys Company, as well as adjunct professor of statistics at New York University. From 1936 to 1942 he worked in the research division of the Works Projects Administration, where he set up and developed the first national probability sample of the United States for the W.P.A. monthly labor force report. This survey was transferred (with Mr. Frankel) to the Census Bureau where it became the current population survey, still in operation today. After serving as a Navy communications officer during the war, he became chief statistician at Dun and Bradstreet. From 1950 to 1957 he was vice president and technical director of Alfred Politz Research. He is a director of the New York chapter of the American Marketing Association, a fellow and past director of the American Statistical Association and a member of the U.S. Census Advisory Committee.

out, one-half of those who had not responded to the second mailing received a third mailing with an increased incentive. The effective response rates were computed by adding the percentage who replied to the first mailing, two times the percentage who responded to the second mailing, and four times the percentage who responded to the third mailing. In 1956, the effective response rate was 82%; in 1960, it was 81%.

The incentive programs for the two studies, however, were different. In the 1956 Study *no* incentive was offered in the first mailing while in the 1960 Study a twenty-five-cent incentive was offered. In addition, prior to the first mailing in 1960, a post card was sent to all sampled persons announcing that a questionnaire would be sent to them. Otherwise, the two studies were alike in that a one-dollar incentive was used for the second mailing and a five-dollar incentive for the third mailing.

We shall compare the two procedures in terms of the amount of information obtained per dollar spent to collect it.

COLLECTION COSTS

At first sight the collection costs involved in the 1960 Study would seem to be much greater than in the 1956 Study because of the additional cost of $750 for post cards and about $2,500 for incentives in the first mailing. However, if these initial incentives increased the response rate for the first mailing sufficiently, then the amount of money spent on incentives and mailing charges later on would be decreased. If the savings on these later charges were greater than $3,250, then the total collection cost of the present survey would be less than that of the 1956 survey.

Table 1 summarizes the results of the mailing operations for the two surveys.

Table 2 shows the collection costs, assuming that the direct cost of mailing a questionnaire was $.40. It will be seen that the total collection cost in 1960 was only $491 greater than in 1956.

TABLE 1

RESULTS OF MAILINGS

	1956 Survey	*1960 Survey*
First Mailing (less Post Office returns)	9528	9466
Refusals	—	163
Responses to first mailing	3290	5375
Non-responders	6238	3928
Second Mailing (50 per cent of non-responders)	3119	1964
Refusals	—	116
Responses to second mailing	1711	804
Non-responders	1408	1044
Third Mailing (50 per cent of non-responders to second mailing)	704	522
Refusals	—	22
Responses to third mailing	287	168
Non-responders	417	332

THE AMOUNT OF INFORMATION OBTAINED

While one method of collection may be less expensive than another, we must consider the amount of information obtained for the expenditure. One crude measure of the amount of information is the number of actual returns: 5,288 in 1956, 6,347 in 1960. But good response rates are desirable only if they bring greater precision to our estimates. Although the 1960 Study yielded twenty per cent more returns at about five per cent more cost than the 1956 Study, it was not necessarily more efficient. If we think of efficiency as units of information per dollar spent, we need a measure of information with which to compare these studies. The reciprocal of the variance of an estimate from a study is the usual measure of the amount of information contained in the estimate. A derivation of this variance will be found on page 4. Using formula 12 from the derivation, we can compare the amounts of information obtained from the 1956 and 1960 surveys.

$$\sigma_{\bar{x}_r}^2 = \frac{\sigma^2 (p_1 + k_1 p_2 + k_1 k_2 p_3)}{n (p_1 + p_2 + p_3)^2}$$

TABLE 2

COLLECTION COSTS

	No. of Questionnaire Mailings		*Questionnaire Mailing Costs*		*Incentive Costs*		*Total Collection Costs*	
	1956	*1960*	*1956*	*1960*	*1956*	*1960*	*1956*	*1960*
Post Cards	—	—	$ —	$ —	$ —	$ 750	$ —	$ 750
First Mailing	9528	9466	3811	3786	—	2367	3811	6153
Second Mailing	3119	1964	1248	786	3119	1964	4367	2750
Third Mailing	704	522	282	208	3520	2610	3802	2818
	13351	11952	$5341	$4780	$6639	$7691	$11980	$12471

TABLE 3

EFFECTIVE RESPONSE RATES

Mailing	*1956 Survey*	*1960 Survey*
First (p_1)	.345	.568
Second (p_2)	.360	.170
Third (p_3)	.120	.071
Total	.825	.809

Substituting the response rates of Table 3 in formula 12, we will calculate the variances of estimates from the two surveys.

For 1956

$$\sigma_{\bar{x}_r}^2 = \frac{\sigma^2 [.345 + (2)(.360) + (2)(2)(.120)]}{9528 (.345 + .360 + .120)}$$

$$= \frac{\sigma^2}{9528} \cdot \frac{1.545}{(.825)^2} = .000241\sigma^2$$

For 1960

$$\sigma_{\bar{x}_r}^2 = \frac{\sigma^2 [.568 + (2)(.170) + (2)(2)(.071)]}{9466 (.568 + .170 + .071)}$$

$$= \frac{\sigma^2}{9466} \cdot \frac{1.192}{(.809)^2} = .0001925\sigma^2$$

The 1960 survey produced approximately 26 per cent less variance, and thus 21 per cent more information per dollar than did the 1956 survey.

APPLICATION TO FUTURE SURVEYS

The formula for the variance has direct application to the conduct of future mail surveys. If we re-examine formula 12, there are certain obvious inferences that may be drawn.

First, in mail surveys it is usually necessary to remail to non-respondents to the first mailing in order to achieve an acceptable overall response. If no subsampling were done,

$$k_1 = k_2 = 1 \text{ and } \sigma_{\bar{x}_r}^2 = \frac{\sigma^2}{n (p_1 + p_2 + p_3)}$$

which is simply σ^2 divided by the total number of responses.

However, mailings after the first usually offer increased incentives. Because of budget limitations, usually only subsamples of non-respondents are contacted. By subsampling, we make the value of the k's greater than one and thus increase the total variance. If, with appropriate incentives as in the 1960 survey, we are able to increase the response rate of the first mailing, we reduce p_1 and p_2 which are multipliers of k_1 and k_2. This tends to keep the variance as small as possible.

Second, it turns out that it is possible to determine k_1 and k_2 in such a manner that the smallest possible variance can be achieved with a given budget for collection costs. For example, in both the 1956 and 1960 Studies, $k_1 = 2$ and $k_2 = 2$. Was this the best possible choice? Could we have not taken $k_1 = 1$ and $k_2 = 2$? In this case the variance would have been reduced in either of the two studies, but the collection costs would have gone up. On the other hand, we could have reduced the total collection cost (and still obtained the same overall effective response rates) by setting $k_1 = 5$ and $k_2 = 3$. However, this would have increased the variance.

The values of k_1 and k_2 which provide the smallest variance per dollar can be determined mathematically by minimizing the variance subject to the overall cost function.

The total cost of the mail survey C will be

$$C = nc_1 + \frac{nQ_1c_2}{k_1} + \frac{nQ_2c_3}{k_1k_2}$$

where c_1, c_2, and c_3 are the unit costs (including mailing and incentive costs) for the first, second and third mailings respectively. Q_1 and Q_2 are the proportions in the population who do not respond to the first and second mailings, either because they make no return or because they return a refusal to give information.

The optimum values of k_1 and k_2 are:

$$k_1 = \lambda \sqrt{\frac{Q_1c_2}{p_2}} \; ; \quad k_1k_2 = \lambda \sqrt{\frac{Q_2c_3}{p_3}}$$

where the Lagrange multiplier, λ, is given by

$$\lambda = \frac{n}{C - nc_1}\left(\sqrt{Q_1p_2c_2} + \sqrt{Q_2p_3c_3}\right)$$

In the 1960 Study,

$C - nc_1 = \$5568.00$	$p_1 = .568$	$Q_1 = .415$
$c_2 = \$ \; 1.40$	$p_2 = .170$	$Q_2 = .220$
$c_3 = \$ \; 5.40$	$p_3 = .071$	

and the optimum values of k_1 and k_2 come out to be 1.90 and 2.21. In the 1956 Study, the optimum values of k_1 and k_2 come out to be 1.88 and 2.29. In both studies the subsampling rates actually used were close to the theoretical optima.

In practice the exact values of the constants necessary to determine the optimum for k_1 and k_2 are not known in advance. However, there are two considerations which are of help to the practitioner. First is that the determination of k_1 and k_2 may be postponed until after responses have been made to the first mailing. This means that Q_1 in the above formulae is known. Second is the fact that the value of the variance is relatively insensitive to different values of k_1 and k_2 when these values are in the vicinity of the optima. This means that the survey designer is safe in relying upon previous experience in making *a priori* estimates of p_2, Q_2 and p_3.

A FORMULA FOR THE VARIANCE OF AN ESTIMATE OF A POPULATION CHARACTERISTIC

We shall derive a formula for the above variance. This formula will express the variance in terms of the original sample size, the variability of the characteristic in the population, the proportion who respond to various mailings and the subsampling fractions used for mailings after the first. In our notation, k_1 and k_2 refer to reciprocals of the subsampling fractions of non-respondents to the first and second mailings, respectively. Capital letters denote population characteristics and lower case letters denote sample characteristics.

Population	*Sample*	*Definition*
P_1, P_2, P_3	p_1, p_2, p_3	Proportions responding to the 1st, 2nd and 3rd mailings respectively.
$\overline{X}$	$\overline{x}$	Average value of characteristics in which we are interested.
$\overline{X}_r$	$\overline{x}_r$	Average value of characteristic among responders.
	n	Number of persons in the sample.
	n_i	Number of persons who respond to the ith mailing.

Derivation

1. Since the p's are used as weights, since we are dealing with large samples, and since $E(p_i) = P_i$ it is reasonable to assume in the derivation below that $p_i = P_i$

2. $$\overline{X}_r = \frac{P_1\overline{X}_1 + P_2\overline{X}_2 + P_3\overline{X}_3}{P_1 + P_2 + P_3}$$

3. $$\overline{x}_r = \frac{p_1\overline{x}_1 + p_2\overline{x}_2 + p_3\overline{x}_3}{p_1 + p_2 + p_3}$$

4. $$E(\overline{x}_r) = \overline{X}_r$$

5. $$\text{Mean Square Error} = E(\overline{x}_r - \overline{X})^2$$
$$= E(\overline{x}_r - \overline{X}_r)^2 + E(\overline{X}_r - \overline{X})^2$$

Explanation

1. For the reasons given, the response rates found in the sample mailings will be assumed to reflect the response rates that would be found in the population.

2. $\overline{X}_r$ is the mean of the estimate for all responders in the population. It is equal to the weighted mean of the value that would be obtained from each mailing.

3. x_r is the corresponding mean found in the sample. It, too, is a weighted mean, this time of actual responders.

4. $E(\overline{x}_r)$ denotes the *expected value* of x_r. The equation says that the average value of the sample estimate from responders will equal the true value of all persons in the population who would respond.

5. The Mean Square Error of the sample estimate is a measure of how sample estimates derived from responders only are scattered about the true value for the entire population. The formula shows how it can be split into two parts: the variation of estimates derived from *responders in the sample* about the value for *responders in the population* and the square of the difference between the value of the characteristic of those persons in the population who would respond and the value of the characteristic of all persons in the population regardless of whether or not they respond.

Derivation (continued)

6. $$= \sigma_{\bar{x}_r}^2 + (\text{Bias})^2$$

The sample variance of $\bar{x}_r$ about $\bar{X}_r$ can be written as

7. $$\sigma_{\bar{x}_r}^2 = \frac{p_1^2\sigma_{\bar{x}_1}^2 + p_2^2\sigma_{\bar{x}_2}^2 + p_3^2\sigma_{\bar{x}_3}^2}{(p_1 + p_2 + p_3)^2}$$

8. If we assume random selection,

$$\sigma_{\bar{x}_i}^2 = \frac{\sigma_i^2}{n_i}$$

9. a. Now $n_1 = np_1$

b. $$n_2 = \frac{np_2}{k_1}$$

c. $$n_3 = \frac{np_3}{k_1k_2}$$

10. Then $$\sigma_{\bar{x}_r}^2 = \frac{\frac{p_1^2\sigma_1^2}{np_1} + \frac{p_2^2\sigma_2^2}{\frac{np_2}{k_1}} + \frac{p_3^2\sigma_3^2}{\frac{np_3}{k_1k_2}}}{(p_1 + p_2 + p_3)^2}$$

11. $$= \frac{p_1\sigma_1^2 + k_1p_2\sigma_2^2 + k_1k_2p_3\sigma_3^2}{n\,(p_1 + p_2 + p_3)^2}$$

If we take $\sigma_1 = \sigma_2 = \sigma_3$ then the variance formula may be simplified

12. $$\sigma_{\bar{x}_r}^2 = \frac{\sigma^2\,(p_1 + k_1p_2 + k_1k_2p_3)}{n\,(p_1 + p_2 + p_3)^2}$$

Explanation (continued)

6. These two parts of the Mean Square Error can be identified as the variance of the estimate derived from responders in the sample (which is what we want) and the bias of non-response respectively.

7. Since variances from different parts of the sample can be added with appropriate weights, we can write the variance of responders in the sample as a weighted sum of the variance of responders to each mailing separately.

8. This equation expresses the well known fact that the variance of the mean of a sample drawn at random from a population is equal to the variance in the population divided by the number of people in the sample.

9. a. The number of people responding to the first mailing (n_1) is equal to the proportion responding (p_1), multiplied by the number contacted on this mailing (n).

b. The number responding to the second mailing (n_2), is equal to the proportion of the total sample who would respond to a second mailing (p_2), multiplied by the proportion actually contacted $\left(\frac{1}{k_1}\right)$ and the number in the original sample (n).

c. Similarly, the number responding to the third mailing (n_3), is equal to the product of the proportion of the total sample who would respond to a third mailing (p_3), the proportion actually contacted $\left(\frac{1}{k_1k_2}\right)$, and the number in the original sample (n).

10. We replace $\sigma_{\bar{x}_i}^2$ in equation 7 by $\frac{\sigma_i^2}{n_i}$ as suggested by 8. Then we replace the n_i's by the appropriate expressions in equations 9 a, b and c.

11. This is a simplification of 10.

12. A further simplification, obtained by assuming the variance of the characteristic of responders to each mailing is the same. This equation now expresses the variance of the estimate in terms of the sample size (n), the population variance (σ^2), the proportions who respond to various mailings (p_1, p_2, p_3) and reciprocals of the subsampling fractions used in mailings after the first (k_1, k_2).

—Lester R. Frankel

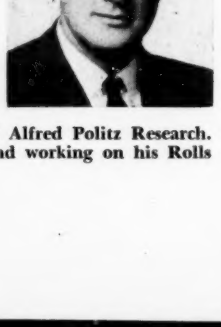
Personality Characteristics of Purchasers[1]

ARTHUR KOPONEN
J. Walter Thompson Company

The needs 8,963 persons expressed in a personality test have been related not only to their respective ages, incomes and locations, but also to their purchases of certain products and brands. Dr. Koponen's analysis of these relationships suggests that they can, if given proper weight, help guide advertising strategy.

THE SALES EFFECT of marketing is greatest when competing brands are physically alike. The consumer must base his selection on non-physical brand properties, for he could otherwise perceive no differences between brands. Advertising, merchandising and packaging may influence his perception of brands and thus his choice of one over another.

So the advertiser seeks to create and control what has been called the image of his brand. He aims to develop the brand image which best supports direct sales appeals to his potential customers. Clearly this image should be compatible with the personalities of these prospects; their perceptions of the brand should match their respective needs. It is easier to create or change a brand image than to change the existing needs and values of people.



ARTHUR KOPONEN recently returned from two years in the London office of J. Walter Thompson to become secretary of their review board. He holds a B.A. from the University of California, an M.A. from the University of Florida, and a Ph.D. in experimental psychology from Columbia University. He taught statistics at the University of Florida for a year. Before joining J. Walter Thompson, he worked for the Office of Naval Research, the New York Psychiatric Institute and Alfred Politz Research. His hobbies include wine-making and working on his Rolls Royce.

We need to know not only the existing brand image, but also the psychological needs of the people who comprise the market. Do the expressed needs of our potential customers differ from those of other groups in the population? They must, for if they didn't, all people would tend to buy the same products, given similar conditions, and we know that they don't. If we can learn the particular psychological needs and responses of our best prospects and relate them to purchasing behavior, media exposure and other classifications, we are in a better position to influence them through advertising.

Of course, this knowledge of his consumers' psychological characteristics would never keep the advertiser from advancing the best arguments for his product. Rather it would affect his *manner* of presenting the most telling sales points, just as a good salesman varies his approach to fit the characteristics of each customer. Psychological characteristics would assume overriding importance only if the advertisers were not allowed to mention the principal benefits of the product. This state of affairs seems most improbable.

PERSONALITY TESTS

Hundreds of tests have attempted to measure psychological characteristics of individuals. Yet their success has been limited to the selection o

[1] Based on a speech to the Sixth ESOMAR-WAPOR Congress in Brighton, England, September 9, 1959.

individuals for certain jobs. Psychologists have had little success in showing that these tests measure what they are supposed to measure (see Anastasi, 1954).

For screening and predictive purposes, the reality of the psychological factors is not of first importance, because the researcher is simply interested in establishing relationships. If he finds that people who answer a question a certain way are more likely to succeed in an occupation than others who answered the same question differently, the researcher need not concern himself with the meaning of the question. Equally useful relationships can be established between questionnaire answers and purchasing behavior. The researcher can be an accurate predictor without "really knowing" what a particular question means (see Politz, 1957).

The success of any test, then, depends on whether it predicts what we want it to predict. For advertising purposes, such "validity" has to be defined in accordance with the objectives of an advertiser. This means that if the copy writer appeals to a certain psychological need, people who score high on this need should be more likely to respond to his advertising than people scoring low on these characteristics.

METHOD

When the study was begun in 1956, the J. Walter Thompson Panel was made up of over 5,000 families located throughout the United States. We knew the income of these families, family composition, ages of household members, education, occupation, the products they bought, how often and where they bought, what they owned, the magazines they read, the T.V. shows they watched, and so on. This information was kept on a continuing basis so trends could be watched, audiences accumulated, and relationships between various factors observed.

The Edwards Personal Preference Test (see Edwards, 1954), which measures fifteen psychological needs (see Table 1) was administered to the panel and completed by 97 per cent of female household heads and 89 per cent of male household heads, a total of 8,963 respondents. To our knowledge this is the largest cross section of the adult United States civilian population ever obtained in psychological testing.

The questions consisted of pairs of equally desirable alternatives (determined by previous tests), each alternative representing a different need. The respondents' task was to choose one alternative in each of 225 pairs. The test was so constructed that each psychological need, as represented by a number of statements, was paired with all of the other needs an equal number of times. For example, one pair representing the needs of dominance and exhibition is:

I like to tell other people how to do their jobs
I like to be the center of attention in a group

The panel member was asked to choose the statement that "fit him better" in each of the 225 pairs.

Such choices indicate only the needs an individual *expresses,* not necessarily how he "really feels" or behaves. They are important in this study only as a measurable response that may or may not be related to buying behavior.

TABLE 1

DEFINITIONS OF THE NEEDS MEASURED BY THE EDWARDS PERSONAL PREFERENCE TEST

Achievement:	To rival and surpass others, to do one's best, to desire prestige, accomplishment, ambition, success
Compliance:	To accept leadership, to follow willingly, to let others make decisions, submission, deference, conformity
Order:	To have things arranged, to be organized, to be clean, tidiness, neatness, organization
Exhibition:	To be the center of attention, to have others notice you, to make an impression on others, vanity and self dramatization
Autonomy:	To seek freedom, to resist influence, to defy authority and coercion, independence and freedom
Association:	To form friendships and associations, to participate in groups, to do things with others, affiliation and companionship
Analysis:	To understand others, to examine motives, to analyze your own behavior, understanding and introspection
Dependence:	To seek aid, to be helped by others, to be guided and advised, helplessness
Dominance:	To control others, to be a leader in groups, to influence others, control and supervision
Self Depreciation:	To feel inferior to others, to accept blame, to accept punishment, masochism and shame
Assistance:	To help others, to be sympathetic, to protect others, helpfulness and support
Change:	To do new things, to do different things, to change daily routine, variety and novelty
Endurance:	To stick at a task, to work hard at a job, to complete anything undertaken, persistence and toil
Heterosexuality:	Willingness to talk about sex, to be attracted to the opposite sex, to go out with the opposite sex, love and desire
Aggression:	To attack, assault or injure, to belittle, harm, blame, to punish, sadism and violence

RESULTS

As would be expected, highly significant differences were found between the average scores of men and women who answered the questions. Men were higher in their expression of needs for achievement, autonomy, dominance, sex and aggression. Women

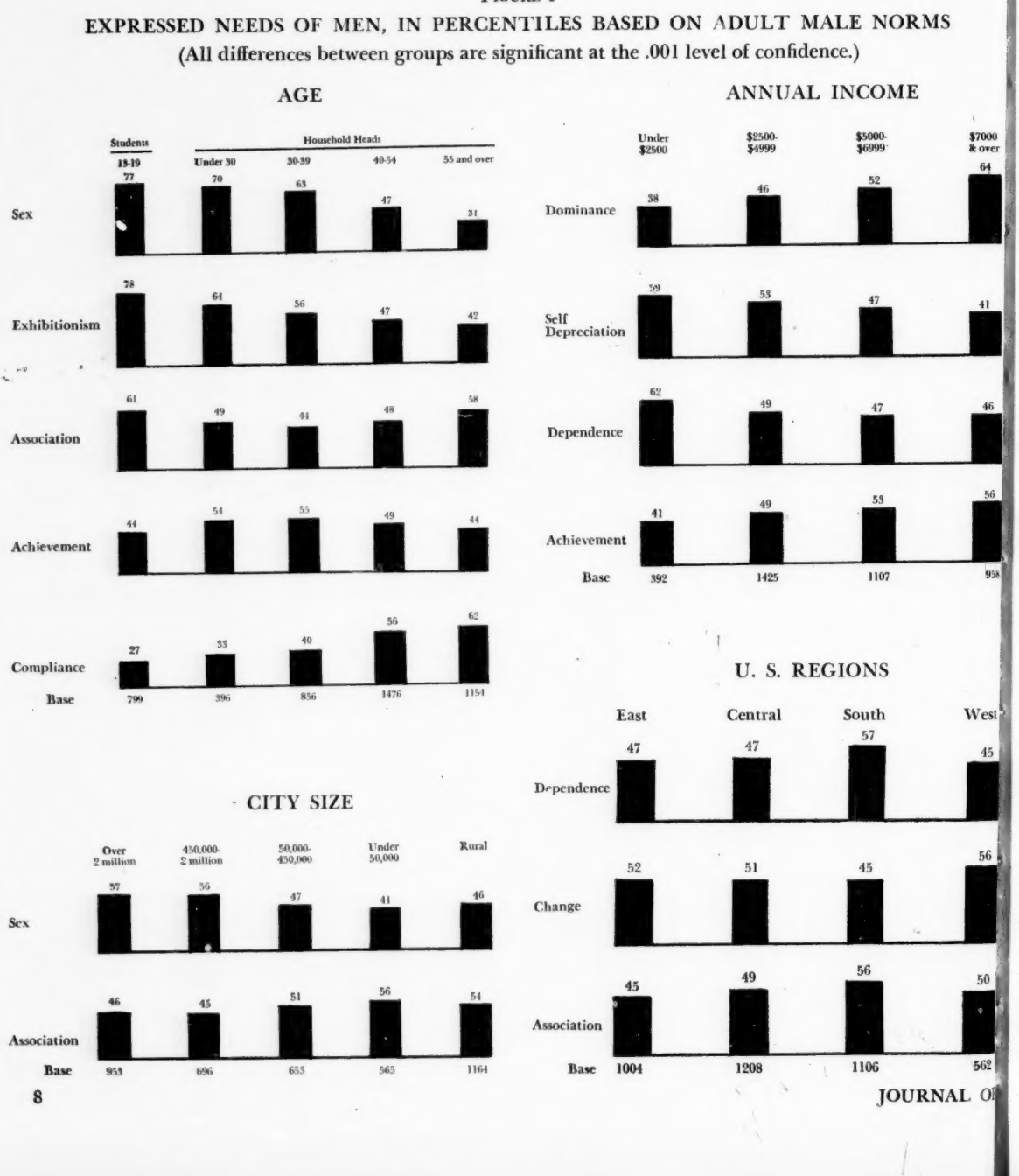
received higher scores on association, assistance, dependence, order, compliance and self depreciation.

Similarly striking differences between age groups were obtained (see Figure 1). The younger were high in expressed need for sex, change and exhibition. Older groups expressed a greater need for order and compliance. Most of the 15 traits studied were linearly related to age, either directly or inversely. But need for association, i.e., wanting to do things with other people, participate in groups, etc., was highest among teenagers and those over 55, with the lowest need for association occurring in the 30-39 age group. Need for achievement, or wanting to rival and surpass others, was lowest in the teen-

FIGURE 1

EXPRESSED NEEDS OF MEN, IN PERCENTILES BASED ON ADULT MALE NORMS

(All differences between groups are significant at the .001 level of confidence.)



age and oldest groups, and reached its peak among household heads below the age of 40. Females, who score significantly below men in such needs as achievement and dominance, did not show significant variation by age groups on these two needs.

Figure 1 shows analogous relationships of trait scores to income, city size, and U.S. region, respectively. As before, all differences between groups are statistically significant beyond the .001 level of confidence. That is, the chances are less than one in a thousand that such differences were the result of an accident of sampling. It should be noted that only traits that showed such significant differences are shown in the figures.

Males in the upper income groups expressed a greater need for dominance and achievement, whereas males in the lower income groups expressed greater feelings of inferiority and the need to help and to be helped by others. There were also significant differences according to the size of the city in which the respondent lived. For example, there was a greater expression of sex attitudes in the larger cities. The lowest expressions of sex were found in the small towns. Males living in rural areas expressed a greater interest in sex than did those people living in small towns. Men living in small towns and the rural areas expressed a greater need for association and wanting to do things with other people, whereas these attitudes were significantly below average in the big cities.

The expressed need for dependence was highest in the southern part of the United States, as was the need for association and assistance. The western United States differed significantly from other areas of the country in that people there expressed relatively high need for change.

Obviously the effects of each of these relationships between psychological traits and age, income, city size or region are not pure. Such demographic factors are themselves highly interrelated. Older groups have higher incomes, for example.

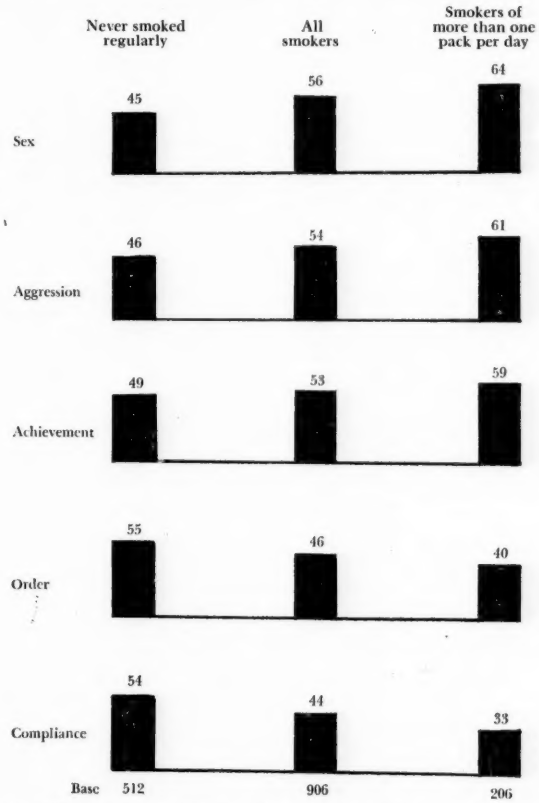
There are statistical methods for determining how much variation in a particular demographic factor can be attributed to a psychological trait while holding all the other demographic factors constant. From an inspection of the variances involved it appeared that many trait differences reported here would hold even when the effects of other factors were statistically removed (see Koponen, 1957).

PERSONALITY AND PURCHASE

That expressed needs varied significantly among the above-described demographic sub-groups was not surprising. Whether these needs related to the panel's reported purchases was a more important question. Such relationships were examined in over a dozen fields, from consumer durables to groceries. Figure 2, for example, shows that the average U.S. male smoker scored significantly higher than the average U.S. male in his expressed needs for sex, aggression, achievement and dominance, and significantly below average in compliance, order, self depreciation and association. Age, income and other demographic differences may in part account for the variations in responses. Still, these differences showed clearly that heavy smokers and non-smokers were different kinds of people in that they responded differently to the same questions.

FIGURE 2

EXPRESSED NEEDS OF MALE CIGARETTE SMOKERS AND NON-SMOKERS, IN PERCENTILES BASED ON ADULT MALE NORMS

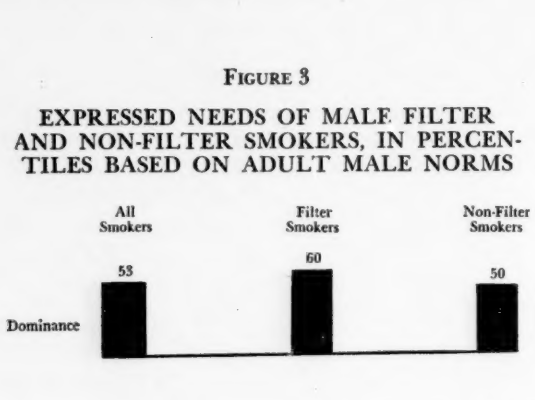


All differences between heavy smokers and non-smokers are significant at the .01 level of confidence.

Personality traits were different not only between product purchasers and non-purchasers, but also between buyers of different types of a product. Figure 3 shows that filter cigarette smokers scored higher than non-filter smokers on dominance, change and achievement, and lower on aggression, self depreciation and autonomy.

FIGURE 3

EXPRESSED NEEDS OF MALE FILTER AND NON-FILTER SMOKERS, IN PERCENTILES BASED ON ADULT MALE NORMS

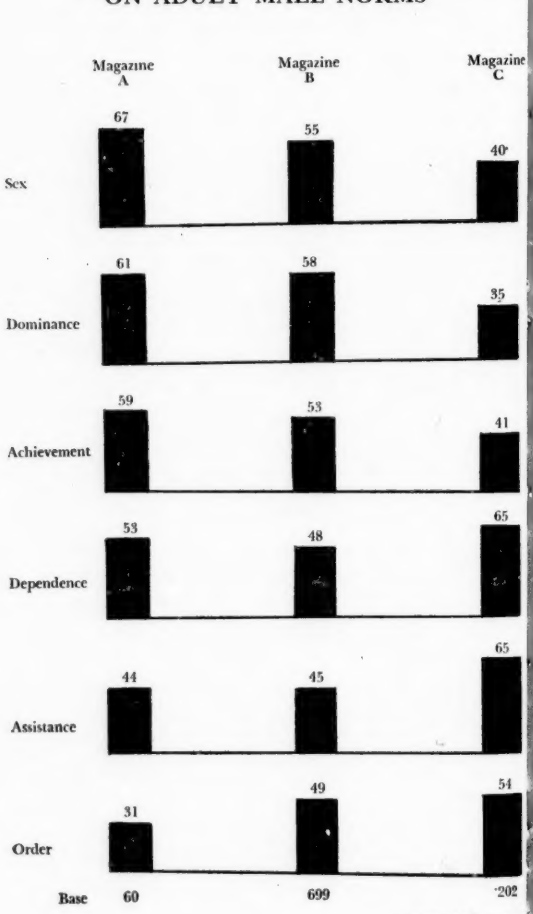


Knowing the needs of consumers of certain product types could be useful as a background for preparing copy. A more obvious advertising decision to be aided by such knowledge is that of media selection. If audiences of different media vary in their expressed needs (which are in turn related to their tendencies to purchase) then new and useful dimensions will have been added to the media buying criteria. Figure 4 shows that men who have copies of Magazine A in their homes responded quite differently from men who have copies of Magazine C in their homes. Magazine A men were high in their expressions of dominance and sex. Men in Magazine C homes, on the other hand, expressed greater needs for dependence, assistance and order. Thus the responses of men who smoke are more like the responses of men exposed to Magazine A than those exposed to Magazine C.

We do not mean to suggest that media selection be based solely on matching with personality characteristics, which in turn match with brand or product purchase. Obviously a more direct cross tabulation would be of actual product usage by magazine readers and non-readers.

FIGURE 4

EXPRESSED NEEDS OF MALE MAGAZINE READERS, IN PERCENTILES BASED ON ADULT MALE NORMS



Personality scores serve as additional factors in matching brand and media consumption. But they, along with all classification factors, should be placed in proper perspective. *How much* does each classification variable contribute to the explanation of the readership of a given magazine, or the purchase of a particular product? Fortunately, there are methods of analysis which enable us to determine the extent of a given variable's contribution to a specific criterion.

These analyses are designed to find out what accounts for the variation in the purchase of brands and products. Something of the nature of such analysis may be seen in Table 2.

TABLE 2

PERCENTAGE OF PURCHASERS WITHIN INCOME AND EDUCATIONAL GROUPS

Income		*Years of Education*	
Upper	90%	13 or more	92%
Middle	75%	9–12	75%
Lower	50%	8 or less	65%

Note that purchase of this product is related both to income and education. Similar cross-tabulations are numerous. But an analysis of this kind does not indicate *how* important a particular classification characteristic (or factor) is in the purchase of the product. Education and income are related, and it is difficult to estimate the purchase effect of *each* factor individually. We could "hold education constant" by comparing different income groups within a given education group. But when there are a large number of factors to be held constant in this fashion, analysis of all sub-groups becomes impracticable.

Multiple regression procedures are more suitable. They permit us to figuratively hold a large number of factors constant while we examine the influence of each factor separately. Electronic computers can solve the large number of necessary equations in a matter of hours.

This method was used to examine the variation in the amount of one product purchased in a sample of 100 chosen from the panel. We determined how much of the variation in amount purchased could be attributed to each of 19 factors: age, income, education, city size, and the 15 personality traits. These 19 variables accounted for only 13 per cent of the total variance. The four demographic factors accounted for about as much of the variance as did the psychological traits. In another product class, even when data from the entire panel was examined, only six per cent of the purchasing variance was explained by 20 variables. The personality scores accounted for two per cent and the demographic variables four per cent.

The overwhelming amount of purchasing variation in both studies was still unexplained, perhaps because the amounts purchased of these products were influenced more strongly by other factors—psychological, social, or other measures more specific to the product.

The importance of various factors will naturally vary from product field to product field. If we know what the relevant characteristics are, we can predict within limits of probable error the purchase of the product from classification information. Or, given the purchasing information, we could predict what the most likely characteristics of the purchaser will be. Our multiple regression work to date indicates that we have yet to find the most relevant of the characteristics for the purchase of these products. Future analyses of these and other product groups may uncover more predictable aspects of purchase behavior. Meanwhile, we have conducted some simple studies of the "behavioral validity" of the Edwards Test.

VALIDATION STUDIES

We wanted to see if people who scored high on a certain expressed need would respond more frequently to appeals to this need. Two groups of respondents were so chosen as to be identical in such characteristics as age, income, city size, etc., but different in the expressed need being tested. The samples were chosen so that one group was high on the need and the other group low.

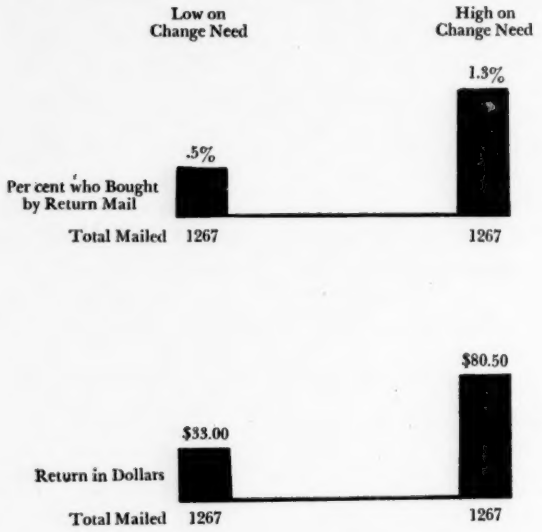
In each test a sales promotion piece was deliberately written to appeal to those high on the need in question. These "appeals" were mailed to the matched samples. The validity of the appeal was then checked by the direct mail sales returns, a higher return being expected from people who scored high on need.

Although there were statistically significant differences between the high and low groups in sales responses, the differences were relatively slight (Figure 5). People who scored high on the need did respond more frequently to the appeal than a matched group who were low on the need. But other factors, such as price, product qualities and the type of appeal used apart from its psychological posture, seemed to be much more important.

We have concluded that an individual's psychological characteristics as measured by personality tests play a role in his response to advertising. Insofar as we have been able to determine, the influence of these factors is relatively small. This influence varies from product group to product group; for some, certain psychological needs may be very important. The objectives of further research in this area should be to determine for each product class what the relevant factors are, and the degree of importance of each.

FIGURE 5

RESULTS OF A VALIDATION TEST USING AN APPEAL TO THE NEED FOR CHANGE



Difference in returns between groups was significant at the .05 level.

REFERENCES

ANASTASI, ANNE. *Psychological Testing.* New York: Macmillan Co., 1954.

EDWARDS, A. L. *Personal Preference Schedule Manual.* New York: Psychological Corporation, 1954.

KOPONEN, A. *The Influence of Demographic Factors on Responses to the Edwards Personal Preference Schedule.* Unpublished Ph.D. dissertation, Columbia University, 1957. University Microfilms, Ann Arbor, Michigan, No. 57-4338.

POLITZ, A. Science and Truth in Marketing Research. *Harvard Business Review.* January, 1957.

REPRINTS

Reprints of articles in this issue may be requested from their authors, or obtained from ARF at $1.00 each for orders of less than five, $0.50 each for 5-99, and at discounts quoted individually for orders of 100 or more.

The trade of advertising is now so near to perfection that it is not easy to propose any improvement.

—DR. SAMUEL JOHNSON (1709-1784)

Exposure and Communication Measures of Outdoor Advertising in Britain

BRIAN D. COPLAND
Hobson, Bates and Partners Ltd.

Two British studies of outdoor advertising have adopted different criteria of effectiveness. The author discusses the pros and cons of each criterion and its application to advertising in other media.

THIS COMMUNICATION WILL PRESENT a review of progress in the field of outdoor audience research and comment upon certain decisions which are engaging the attention of researchers and media planners. The preparation of this material has been prompted by a talk given by Dr. Seymour Banks at the Fifth Annual Conference of the Advertising Research Foundation (Banks, 1959). Its relevance to the problems of audience measurement currently being studied in the United States will, it is hoped, become apparent. Dr. Banks said:

> "The [ARF Audience Concepts] committee felt the necessity for media evaluation procedures to go beyond statements of audiences or exposure opportunities created by advertising vehicles, to deal with or to call for measures of the communication performance of advertisements within their media context. All data which are essentially pure media data—whether these be circulation, audience, exposure opportunities, frequency distributions of exposure—produce circumstantial evidence from which we are supposed to draw inferences as to the performance of advertisements.
>
> "We hear a great deal about authority, prestige and editorial environment. We hear that some media have voluntary attention paid to them, and others involuntary attention. We are told that some programs have higher sponsor identification than others. All of these statements essentially say that an advertisement placed in Advertising Vehicle A somehow will have more value than the same or equivalent advertising placed in Advertising Vehicle B.
>
> "Now, unless we have actual data on the communication performance of advertisements within their respective media contexts, it's impossible to make such a statement upon the basis of actual evidence."

A further comment is necessary before discussing outdoor advertising research in Britain. Those readers who are accustomed to planning and buying the outdoor medium in the United States may not know that in Britain package displays do not exist. Individual poster sites or hoardings[1] (both single and multiple) are selected by the media buyers on a primarily subjective basis, with the intention of arriving at some predetermined number of sites which is deemed adequate for their particular purpose in any given area. Apart from certain single sites and bulletin boards, the situation is not highly competitive in that the plant owners often have a monopoly of sites in the areas in which they work. High traffic figures are sought for, as is a satisfactory geographical distribution of the sites.

There are no 30-day showing periods, sites being rented generally for periods of 13 weeks or more. Considerable numbers of the "better" sites are held on a long-term "until-cancelled" basis by many large advertisers. In consequence, the competition for obviously valuable sites is considerable, and one of the tasks of the planner in this medium is progressively to improve his displays by bargaining for better sites after the campaign has started, and by attempting to get his own individual poster placed

[1] Poster site = place where hoarding is erected. Hoarding = billboard, i.e., physical structure to which one or more posters can be affixed. A solus site or single hoarding provides space for one poster only: a multiple hoarding provides space for several different posters.

BRIAN D. COPLAND is research and media director at Hobson, Bates and Partners Ltd. in London. Formerly he was in charge of research at Lambe & Robinson—Benton & Bowles Ltd. and at the London Press Exchange Ltd. A fellow and council member of the Institute of Practitioners in Advertising, he was chairman of the sub-committee responsible for technical aspects of the first I.P.A. National Readership Survey. Other major research projects with which he has been concerned include a continuing viewership survey of television, an advertisement readership survey for the London *Daily Mirror* and several poster audience studies. He is the author of *The Study of Attention Value* and co-author of a textbook on market research. He has also written definitive monographs on African languages, a textbook on anti-aircraft gunnery, and a work on social philosophy.

more advantageously on the multiple hoardings. It is against this background that the research activities in Britain should be considered.

PUBLISHED RESEARCH

If studies of transportation advertising are excluded (and these are few in number), published material in the British outdoor field consists of two major surveys and a handful of small specific investigations. Both major studies (see Market Information Services, 1949, and Copland, 1955) were sponsored by Mills and Rockleys Limited, one of the major plant owners, and represent the only substantial British contribution to the study of this medium. In passing it is perhaps desirable to point out that the author of this communication was responsible for Study II.

Both surveys, as the titles imply, were concerned with the measurement of the poster audience. In order that the radically different nature of the approaches may be made clear from the outset, it is as well to let these two studies speak for themselves. Study I states:

"The survey on which this book is based was planned with the object of establishing the general rules for assessing the number of people who will remember seeing a poster campaign with a normal general showing and using 16-sheet posters, irrespective of the particular product being advertised or the particular design of the poster, but measuring the variations which arise from different *densities* of showing and differences in the period for which the poster is displayed. A secondary object was the measurement of the extent to which receptivity to the poster medium is affected by such factors as the sex, age, or social class of the public, and their leisure or work habits; an entirely subsidiary by-product was the estimation of a 'cost-per-thousand' figure for posters in general which might serve as a rough basis for comparison with other major types of advertising media."

Study II says:

"The first important distinction is between the media audience and the advertising audience, and in contrast to the first study in the series, issued in 1949, this one is concerned solely with the *media audience*. That is to say, the research was designed to measure the extent to which the adult populations of different towns find themselves from day to day in such physical proximity to places where posters are or can be displayed, that they can, *if they wish*, see them. A person who is shown to have passed by such a place is described as having an 'opportunity to see'."

It will be apparent from these quotations that we have here, perhaps in an extreme form, examples of the two basic types of audience measurement referred to by Dr. Banks. It is solely of historical interest to note that Study I, appearing six years before Study II, should have attempted the more sophisticated and complex task of measuring an aspect of communication performance, while Study II returned, deliberately it may be added, to the simpler form of exposure study.

In brief, Study I told us that twelve reasonably typical poster campaigns of approximately equal weight recorded "remembrance value" scores ranging from 5% to 64%. Informants in the towns where these displays were current were shown small, colored reproductions of the posters under test and were asked:

"Here are some reproductions of big posters which have appeared on hoardings, some in this district and some not. Some of them have also appeared as advertisements in newspapers and magazines, on buses and in shops. Now bearing in mind that some of them have appeared in other ways than on hoardings, are there any that you can remember having actually seen as posters on hoardings?"

"Bogus" poster reproductions were presented in an attempt to overcome the difficulties of confusion. Subsequent questions tried also to discover when the posters were last seen and where.

The kind of answer obtained is summarized in Table 1.

TABLE 1

PERCENTAGE OF THE POPULATION WHO REMEMBERED SEEING THE AVERAGE POSTER

	Length of Display	
Density of Showing	*13 weeks or more ("long term")*	*Under 13 weeks ("short term")*
Full showing	55.0%	33.7%
Half showing	41.0%	19.6%
Average of showings used in this survey	47.2%	26.8%

In marked contrast, Study II asked:

1. Have you been out during the last seven days, that is since last .....day?

   If No, close interview. If Yes, continue.

2. Could you tell me what journeys you have made for various purposes during the last seven days so that I can put down which key points you have passed?

(a) Work.	(Ask about mid-day journeys)
(b) Shopping.	(Make sure all shopping is covered)
(c) Entertainment.	(Ask about cinema, theater, dances, pubs, clubs)
(d) Sport.	(Ask about cricket, greyhounds, tennis and any other local sports)
(e) Other journeys.	(Ask about visiting friends, church, children to school, hospital, library, walks, etc.)

3. (About each key-point) Were you on foot or in a vehicle when you passed this point?

In Study II posters were not referred to in the questionnaire and the informant was simply invited to describe his movements—on foot or by vehicle—about the town. The key points referred

to in the questionnaire were in fact a random sample of approximately one in five of all poster sites in the area, and were described to the informants purely in terms of street names, intersections, buildings of public interest, and shops.

The results from Study II lent themselves to statistical treatment, and it was concluded from this investigation that despite the geographical idiosyncrasies of different towns the approximate cover and repetition achieved by campaigns made up of different numbers of poster sites could be established by reference to the following formula:

$$\text{Cover} = \frac{\text{A} \times \text{No. of locations} \times 100}{(\text{A} \times \text{No. of locations}) + 4}$$

where A is a certain function of population and four is an empirical constant. Full details of the calculations from which this formula is derived, including the means by which the function 'A' is determined, are to be found in the published Survey Report.

Thus, on the one hand, Study I provided, on the basis of averages derived from the "communication performance" of displays, an estimate of the advertising audience with little reference to the number of posters required. On the other hand, Study II simply offered the possibility of deciding just how many posters would be required in any area to achieve a predetermined level of cover and repetition. Both surveys were limited in their scope. Study I confined itself to twelve poster campaigns and Study II examined only nine towns and their hinterlands within certain population brackets and ignored the major conurbations.[1]

THE DECISIONS TO BE MADE

The choice now confronting the British poster industry is apparent. It can either make an all-out attack on the "communication performance" aspect of posters, probably basing itself on the recognition technique adopted in Study I, or it can decide to substantiate and extend the purely media audience measurements of exposure which were started in a small way in Study II. Although to some extent the choice must be determined by reference to principles, it will be clear that it will be conditioned to a great extent by practical possibilities, and in the discussion which follows these points will receive due consideration.

In the handling of the poster medium a situation exists which finds no strict parallel in other media. Exposure measurements, or media audience measurements as they can best be described, are essential when the task of media selection demands choices between different units *within* the same medium. For example, the prime purpose of the National Readership Survey regularly produced by the Institute of Practitioners in Advertising is to assist in choosing the most appropriate newspapers and/or magazines for the task in hand. Because no one publication covers more than 50% of the adult population—and most cover much less—a media audience measurement in terms of cover (and consequently frequency) is needed. When comparing the efficiency of different press schedules it is essential that frequency distributions of the exposures obtained in different categories of the population should be readily calculable, and the survey referred to provides this facility. The basic measurement rests upon the answer to the question "Which of these newspapers/magazines have you looked at yesterday/during the past 7 days/30 days?", and this is therefore a good example of true media audience measurement in that the results are entirely independent of advertising content.

The situation is radically different in the field of poster advertising. The unit of purchase is not a substantial and relatively stable entity such as a newspaper or magazine. It is, in fact, a poster display. What is more, it is not a packaged display made up at the discretion of the plant owner to a specification in terms of audience delivered. It is, as has been pointed out above, simply a subjectively chosen collection of poster sites from a number which is far too great to permit any individual measurement of each site. It follows, then, that the decisions to be made by the media planner are largely a matter of the number of sites required to produce the desired level of cover and frequency in the area concerned, regardless of which individual sites can be obtained to make up the total. Typically media planners in this field work to a rule of thumb which divides proposed poster displays into "full" or "half" showings which are based on the number of sites per thousand head of population. What is more, the general impression, fostered, of course, by the poster plant owners, and incidentally reinforced by the media audience measurements of Study II, is that *any* normal poster campaign will, after the expiration of a few weeks, provide as near as may be 100% cover of the population in the area posted, with a "very high" level of repetition. One recalls that the Cedar Rapids

[1] Conurbation = a number of contiguous urban administrative areas generally grouped around a major city.

Study (see Traffic Audit Bureau, 1948) reached a similar conclusion using the diary method.

In the light of the above, it has been suggested that a strict media audience measurement, based as it should be solely on exposure, is redundant, and attention should now exclusively be concentrated on some form of "remembrance value" or measurement of "communication performance."

Which Measure?

Before the case for the immediate and exclusive use of advertising audience measurement is examined, it is as well to draw attention to a fundamental difference between media audience measurements and advertising audience measurements. Such units of measurement as the "opportunity to see" a poster or the "readership" of a newspaper or magazine are thoroughly appropriate for within-media comparisons but not suitable for between-media work. It has been fully realized for some time that it is impossible to equate exposure to one medium with exposure to another. In the choice between different forms of audience measurement, if indeed this choice must be made, it is essential to bear in mind the limited nature of the task undertaken by media audience measurement and the possibility of a wider application of the advertising audience measurement.

It is now appropriate to look at the type of advertising audience measurement that was used in Study I and which might become the model for further work. In principle this is the form of recognition technique in which informants are invited to recognize small, colored reproductions of posters which are at present appearing on the hoardings. It must first be asked whether it can, in fact, be assumed that the recognition of a poster in these circumstances is comparable with the recognition of a press advertisement presented, as in the Starch technique, in its natural surroundings. Whether this form of recognition can be considered comparable with the aided-recall of television commercials is yet another question. In other words, we are asking whether we dare simplify our appreciation of the communication process to the stage where recall and recognition techniques as they are now known can form a reasonable basis for comparison.

Even if this large assumption could safely be made, we can hardly be content with a form of measurement which hides very wide differences in advertising content behind broad averages of performance. Averages are usable comparative measures of performance only if their standard deviations are sufficiently small to permit statistically significant differentiation. There is some evidence to show that such averages might discriminate between types of publication (see Copland, 1958, p. 162). As has already been noted, in Study I the "remembrance values" of the twelve poster displays examined there ranged from 5% to 62% and are represented for comparative purposes by an average of 34%. One wonders whether it is reasonable in these circumstances to accept such an average as a fair measure of the communication performance of posters, or as any firm indication of the advertising audience which will be delivered by some proposed campaign whose size in terms of the number of hoardings is not specified, and whose design has not yet been decided.

Confusion Control

This last statement brings to the fore a consideration of the whole subject of "confusion." While several techniques have been devised to minimize this effect, it is nevertheless extremely difficult to arrive at any fair measure of communication performance in the real-life, day-to-day circumstances in which tests must be carried out. However detailed the confusion checking may be, it is unfortunately true that the results of any form of recall or recognition testing are wide open to attack from this direction.

One of the special functions of the outdoor medium, which renders it more susceptible to the effects of confusion, seems to be its power to elicit a considerable volume of recall of the product and its characteristics necessarily derived from advertisements in other media. In contrast, the great strength of a true media audience measurement confined to exposure lies in its independence of content.

If the intention is to abandon the admittedly primitive media audience measurement and to concentrate on some measurement of communication performance, then it will be necessary that the technique adopted should be sufficiently powerful to permit the provision of both profiles and cover of different categories of the population. If an advertising audience measurement along the lines of Study I were to be adopted exclusively, then it would be necessary to make use of different groups of posters in different product groups in order to establish basic levels of interest among the different population sub-groups. It has been found in similar work with the press that the general levels of recall and recognition achieved by advertisements depend

largely on the basic levels of interest in the product groups concerned exhibited by such different subgroups of the population as men, housewives, teenagers, and so on. It is unnecessary to elaborate the practical difficulties with which one would be confronted in these circumstances.

Wanted: Consolidation

Finally, any form of audience measurement that is to be used for within-media comparison must be capable of providing cumulated net cover and frequency figures extended over time as well as space. In other words, we need working tools in the form of relatively simple and easily manipulated statistics. It is hard to see how any measurement of the advertising audience could provide straightforward statistics such as can reasonably be expected from simpler media audience measurement techniques. All these problems are not insuperable, but they seem to demand for their solution a rather more sophisticated technique than is presently available.

It is probably generally agreed that the ultimate aim is a measure of what Dr. Banks calls "communication performance" for each medium which will eventually permit cost comparisons. But it is only possible accurately to measure communication performance in any medium against a clear and detailed background of exposure opportunities and their frequency distributions. The communication process itself, and particularly the many and various techniques by which the existence of communication is established, is affected to such an extent by repeated exposure that it is hard to see how any real progress can be made without first completing and consolidating media audience measurements.

Finally, it is necessary to take some account of the state of mind of the possible users of these figures and the circumstances in which they work. Despite the considerable volume of material produced on the subject of attention value in the press (for example Starch ratings), despite noting and reading studies on car cards, and despite the 12-year old Mills and Rockleys Study I, the acceptance of advertising audience measurements as a basis for "between-media" comparisons is strangely limited. Can it be that the choices between different media —TV, press, posters, cinema, radio—ought not to be made primarily on the basis of a strict measurement of the advertising audiences, but should more properly be the province of Operations Research where all the variables in the marketing mix (and not only a selected few relating specifically to advertising) can, theoretically at least, be taken into account? Is it perhaps true that the choice between media takes place at the same level as that on which the appropriation policy is decided? Do not between-media choices depend largely upon creative considerations which must be based on decisions about the nature of the message to be communicated? These questions, as well as the considerable practical difficulties involved in the conduct of extensive remembrance surveys, must be taken into account.

Perhaps the best course for the poster industry, and maybe for the media world as a whole, would be to establish as firmly as possible all the necessary media audience measurements, and then to proceed to an investigation of the possibility of improving remembrance techniques to the stage where a body of acceptable case histories could be presented.

REFERENCES

BANKS, SEYMOUR. *The Need for New Multi-Dimensional Measurements of Media.* In *Proceedings, Fifth Annual Conference.* New York: Advertising Research Foundation, Inc., 1959.

COPLAND, BRIAN D. *The Size and Nature of the Poster Audience. Study II: A New Assessment of the Opportunities to See Posters.* London: Mills & Rockleys Ltd., May 1955.

COPLAND, BRIAN D. *The Study of Attention Value.* London: Business Publications Ltd., 1958.

INSTITUTE OF PRACTITIONERS IN ADVERTISING. *The I.P.A. National Readership Surveys.* London: a continuing survey.

MARKET INFORMATION SERVICES, LTD. *The Size and Nature of the Poster Audience.* London: Mills & Rockleys Ltd., September 1949.

TRAFFIC AUDIT BUREAU. *Methods for the Evaluation of Outdoor Advertising* (based on a pilot study in Fort Wayne). New York: Traffic Audit Bureau, Inc., 1947.

Differences Between Advertised and Medical Uses of Drugs[1]

ARTHUR A. DONE
University of Illinois

What a doctor expects from a drug is not always the same as its advertised properties. So finds this study of ten leading drugs as used by a nationwide panel of 1000 physicians.

THIS STUDY TESTED the following hypothesis: that physicians use certain drug products in ways other than those for which the drugs were developed and advertised by the manufacturers.

METHOD

Information on intended and advertised usage was obtained from the manufacturers of certain drugs. Their medical directors and advertising managers were asked to state the intended use and desired action of these drugs, and furnish copies of all advertising and promotional materials used from March 1957 to June 1958.

The information on actual usage and desired action of prescribing physicians was obtained from the National Disease and Therapeutic Index statistical detail cards, provided by Taylor, Harkins and Lea, Inc., a medical marketing research firm in Philadelphia.

This firm maintains a nationwide panel of 1000 doctors, which represents all private U.S. practitioners who use chemical-pharmacological medication. Periodically these doctors record, for all patients seen, the indications ("symptoms"), prescribed drug therapy, and desired action. Other physicians supervise the collection of these drug and medical data, which are then edited and coded by licensed pharmacists and trained medical personnel.

From July 1957 through June 1958 the panel reported approximately 190,000 individual visits, of which nearly 154,000 indicated some form of drug therapy. The desired information from these visits was transferred to IBM cards for processing.

Among the 25 drugs most frequently prescribed by brand name (instead of generic name), there were ten for which pharmaceutical firms had furnished the requested information about their promotional activities. This included journal advertising, direct mail, detailing materials, written statements from the medical directors and advertising managers of drug companies as to intended usage, indications, and desired actions. All this information was classified by appeals used, indications, and benefits claimed by each, and compared with the following information on actual usage: the leading indications for which the drug was most frequently prescribed; the major desired actions from prescribed usage; and the type of practice or specialty of the prescribing physician.

ARTHUR A. DONE is a research and teaching assistant in the University of Illinois Department of Marketing. After receiving his B.S. in 1954 and M.B.A. in 1956 from the University of Utah, he taught advertising and marketing research at the University of North Dakota for two years. In 1958, the Midwest Pharmaceutical Advertisers Club awarded him an advertising research fellowship at the University of Illinois.

[1] This study was made possible through a research grant by the Midwest Pharmaceutical Advertisers Club and the cooperation of Taylor, Harkins and Lea, Inc. who supplied much of the research data. The author is also indebted to Dr. Hugh G. Wales, Director of Pharmaceutical Marketing Studies, University of Illinois, for his suggestions and constructive criticisms.

While these data on actual usage were obtained from a random probability sample of physicians, the selection of the ten drugs to be studied was partly arbitrary. Hence results from these ten drugs can give only general indications of actual versus intended uses of the 25 branded drugs most frequently prescribed. No inference can be made from this sample of ten to all drugs. Inferences based on the NDTI probability sample of all doctors and their practice, however, are valid because this sample was effectively random.

The ten drugs selected for the study include three tranquilizers, two sedatives, two antibiotics, two cardiovasculars, and one analgesic.

RESULTS

Tranquilizers

All three tranquilizers studied showed differences between advertised and actual usage. For Tranquilizer X, the disparity had to do with its use as a daytime sedative. The advertising for this drug included a wide variety of appeals, indications and desired actions. Most of these related to the tranquilizing, relaxing, tension-reducing properties of the drug, which, in actual usage comprised only 58.9 per cent of the cases. Sedation, however, was mentioned only once in the advertising, and then only for pre- and post-operative cases.

The NDTI cards indicated that Tranquilizer X was used as a daytime sedative 26.5 per cent of the time (see Table 1) but not necessarily in connection with pre- or post-operative sedation as the advertising suggested. Rather, most of the indications were of the type not involving surgery. The importance of the drug's use as a daytime sedative seems not to have been recognized by the advertiser.

The manufacturers of Tranquilizer Y, on the other hand, state clearly that this drug is "not for sedation or hyperactivity" (see Table 1). Daytime sedation was the most frequent desired action (16.6%), again a significant discrepancy between actual and advertised usage.

Other observed usage for Tranquilizer Y was more in line with the manufacturer's statements and advertising. Approximately 38 per cent of its usage is for its tranquilizing, relaxing, or tension-reducing effect, and 31 per cent for its anti-emetic and anti-nauseant effect. These desired actions are well publicized by the manufacturer. It should be noted, however, that many other suggested indications and desired actions were not followed by actual usage.

TABLE 1

TRANQUILIZERS

Major desired actions	*Percentage of actual use as shown by NDTI*	*Advertised or claimed uses and desired actions*
X		
Tranquilizer	40.8%	Various uses mentioned
Sedative-day	26.5	Not mentioned except for pre- and post-operative sedation
Relaxant	8.7	Various uses mentioned
Reduce tension	5.2	Various uses mentioned
Muscle relaxant	4.2	Various uses mentioned
Other	14.6	Various uses mentioned
Total	100.0%	
Y		
Anti-emetic or anti-nauseant	31.2%	Frequently mentioned
Tranquilizer	28.0	Various uses mentioned
Sedative-day	16.6	"Not for sedation"
Relaxant	5.7	Various uses mentioned
Reduce tension	4.0	Various uses mentioned
Other	14.5	Various uses mentioned
Total	100.0%	
Z		
Anti-emetic or anti-nauseant	26.9%	Profound anti-emetic, anti-nauseant
Sedative-day	22.5	Not mentioned
Tranquilizer	20.7	Alleviate anxiety and tension claimed as most important use
Analgesic	4.4	Ease anxious pain
Other	25.5	Various uses mentioned
Total	100.0%	

Tranquilizer Z showed discrepancies similar to those of Tranquilizer Y. Manufacturer's statements did not mention the sedative effects of the drug, yet 22.5 per cent of its actual usage was for sedation (see Table 1). While alleviation of anxiety and tension was claimed to be the most important desired action of Tranquilizer Z, only 20.7 per cent of its actual usage was for its direct tranquilizing effect. It was used more frequently as an anti-emetic/anti-nauseant (26.9%), or as a sedative (22.5%).

All three tranquilizers were used as daytime sedatives, yet it was never stated that any of these drugs was particularly suitable for such use. Sedation was only mentioned once, and then as a pre- and post-operative sedation, for which the drug was infrequently used. Other discrepancies appear to be more a matter of degree. In some cases, advertising emphasized desired actions while actual usage showed something else as more important. In other cases, many indications and desired actions mentioned in the advertising seldom or never appeared in the actual usage.

Sedatives

The two sedatives in the study showed some disparity between advertised and actual usage, but not as much as among the tranquilizers. The major difference lay in the division of their usage between daytime and nighttime sedation.

The manufacturers of Sedative X said it was "specifically for nighttime sedation, rarely for daytime sedation or tranquilizing effect." Yet approximately 10 per cent of its actual usage was for daytime sedation (see Table 2). Occasionally this drug was prescribed because of its analgesic effect (2.6%), a desired action not mentioned in the advertising.

TABLE 2

SEDATIVES

Major desired actions	*Percentage of actual use as shown by NDTI*	*Advertised or claimed uses and desired actions*
X		
Sedative-night	79.7%	Specifically for nighttime sedation
Sedative-day	9.8	Rarely for daytime sedation
Pre-operative prep.	3.0	Not specifically mentioned
Analgesic	2.6	Not mentioned
Other	4.9	Not specifically mentioned
Total	100.0%	
Y		
Sedative-night	81.5%	Various uses mentioned
Sedative-day	5.0	Various uses mentioned
Pre-operative prep.	3.9	Not specifically mentioned
Anti-emetic	1.8	Not mentioned
Analgesic	1.5	Limited mention
Other	6.3	Various uses mentioned
Total	100.0%	

Sedative Y's daytime use was recognized although the bulk of its use was for night sedation (see Table 2). Other minor uses which did not seem to be fully recognized, however, included pre-operative preparation, analgesic, and particularly anti-emetic, which was not mentioned in advertising.

These two sedatives should not be considered representative of all sedatives. Other evidence shows that nighttime sedation accounts for only 40.6 per cent of the total actual usage of all sedatives, rather than the 80 per cent usage evidenced here. This corroborates the findings with tranquilizers regarding the increasing importance of daytime sedation.

Antibiotics

Some drugs are specifically developed for a certain therapeutic effect and do little more than provide that effect. Over the years the drug may be found effective for additional indications, but the desired action is still the same. Such appears to be the case with the two antibiotics studied. Both Antibiotics X and Y were developed and advertised to kill bacteria of various kinds. The desired action reported by the doctors was "antibiotic" in 93 to 95 per cent of the cases (see Table 3).

TABLE 3

ANTIBIOTICS

Major desired actions	*Percentage of actual use as shown by NDTI*	*Advertised or claimed uses and desired actions*
X		
Antibiotic	94.6%	Major use and desired action
Prophylaxis	.6	Mention included under antibiotic action
Urinary antiseptic	.3	Mention included under antibiotic action
Other	4.5	Mention included under antibiotic action
Total	100.0%	
Y		
Antibiotic	93.0%	Major use and desired action
Prophylaxis	4.5	Post-operative prophylaxis stressed
Urinary antiseptic	.6	Briefly mentioned
Other	1.9	Briefly mentioned
Total	100.0%	

While actual usage of these antibiotics generally corresponded to advertised usage, for Antibiotic Y there was a noteworthy disparity. The largest share of the advertising concerned post-operative prophylaxis and therapy, yet actual usage shows almost no such use of this drug except for what might be included under "health supervision."

Within the general antibiotic use, Antibiotic Y was most often prescribed specifically for upper respiratory infections, though nothing was mentioned in the advertising concerning these indications. This may or may not be significant, depending upon the advertising strategy of the manufacturing company. It does point out the differences between advertised and actual use.

Cardiovasculars

Cardiovascular X, on the market for many years, was developed to combat hypertension and fast heart rate. Both the advertising and actual usage have followed this line quite closely, with some emphasis on its tranquilizing qualities (see Table 4).

Cardiovascular Y, a widely used diuretic, also showed little or no difference between advertised and

TABLE 4

CARDIOVASCULARS

Major desired actions	*Percentage of actual use as shown by NDTI*	*Advertised or claimed uses and desired actions*
	X	
Hypotensive	83.8%	Most important use
Tranquilizer	3.6	Frequently mentioned
Reduce tension	.8	Frequently mentioned
Other	11.8	Various uses mentioned
Total	100.0%	
	Y	
Diuretic	74.7%	Strongly emphasized
Hypotensive	18.2	Strongly emphasized
Symptomatic	.5	Not specifically mentioned
Potentiation	.2	Frequently mentioned
Other	6.4	Other uses mentioned
Total	100.0%	

actual usage. The drug was specifically developed as a diuretic and antihypertensive agent, and nearly all advertising stressed its use in connection with edema and hypertension. Actual usage shows 74.7 per cent of its use as a diuretic and 18.2 per cent as a hypotensive.

Analgesic

One analgesic also showed roughly the same advertised and actual usage. The drug's principal desired action is pain-relief; 92.5 per cent of actual usage was for that purpose (see Table 5). The only point of interest was that 2 per cent of the time this drug was prescribed as a daytime sedative, a point not mentioned in the advertising or statements of intended use.

TABLE 5

ANALGESIC X

Major desired actions	*Percentage of actual use as shown by NDTI*	*Advertised or claimed uses and desired actions*
Analgesic	92.5%	Various uses mentioned in connection with relief of pain
Sedative-day	2.0	Not mentioned
Symptomatic	.8	Not specifically mentioned
Antipyretic	.7	Briefly mentioned
Other	4.0	Various uses mentioned
Total	100.0%	

Summary and Conclusions

The results confirm the previously stated hypothesis: there are noteworthy differences between the advertised and actual uses of certain drugs. Four of the ten drugs studied showed significant differences, and some of the others showed minor differences.

These differences were most pronounced among tranquilizers, and to a lesser degree, sedatives. It was noted that these drugs have wide application over many indications, both somatic and mental. For antibiotics and cardiovasculars, drugs whose desired action is more limited, there were fewer differences between supposed and actual usage. We conclude that type of drug influences the likelihood of differences between advertised and actual uses.

It is hard to say how the relative "age" of the drug affects the likelihood of such differences. One relatively new drug on the market showed none, while some older drugs did. The opposite was also noted. While length of time on the market is likely to have some bearing, we believe that other factors are more important.

Among specific differences, the most significant was the use of tranquilizers for daytime sedation, a use scarcely mentioned in manufacturers' statements and advertising. This accounted for 17 to 27 per cent of the actual usage of the drugs studied. A trend toward increasing daytime sedation may be going unrecognized by drug advertisers.

It was also found that the most important use claimed by the manufacturer for a drug was not always its most frequent actual use. One tranquilizer, advertised to relieve tension and anxiety, was used most often as an anti-emetic and anti-nauseant, and next most often as a sedative.

Some drugs were claimed to have a long list of indications and desired actions, but actual usage showed only a few of these as being significant. Doctors may be growing skeptical of what seem to be extravagant claims, and sticking to the drugs and uses with which they are most familiar.

The 25 drugs most frequently prescribed by brand name comprise only 0.5 per cent of the brands currently on the market, but account for approximately 15 per cent of all drug usage. One of the physicians who consulted on this study, a specialist in internal medicine, commented that a substantial portion of his prescriptions are confined to 10 or 12 drugs. Others with similar prescribing habits would account for such a relatively small number of drugs making up such a large percentage of drugs prescribed.

This study suggests that a drug may not be advertised effectively to physicians because they are not reached by messages that correspond to the actual use of the drug. Analysis of a larger sample of more drugs could help determine the drug classes and types of specialists that contribute most to the disparities between advertised and actual uses. Such research could well furnish drug manufacturers new and useful direction.

FEDERAL STATISTICS IN ADVERTISING

INGRID C. KILDEGAARD
ARF Research Statistician

PROMINENT AMONG THE MILLIONS of figures the federal government produces each year are index numbers. These are simply averages which reflect changes over time. For convenience, each index number is expressed as a percentage for a given base period. A price index of 147, for example, tells us that the average cost of certain commodities has increased 47 per cent since the base period. The same set of items that cost $1.00 then, will sell for $1.47 today.

There are index numbers of consumer prices, wholesale prices, of prices paid by farmers and prices received by farmers, of construction costs, of wholesale production. Generally these numbers are available for sub-groups comprising the index as well as for different geographic areas. Each series serves as an indicator for a particular business or economic activity.

Their applications are varied. The researcher analyzing sales trends may wish to "eliminate" the effect of price change. Here he uses a price index as a deflator, dividing his yearly figures by the corresponding index numbers to equalize the price base. Suppose that the total wholesale sales for some food product was 2.5 million in 1959 versus 2.1 million in 1958. Is this 19 per cent increase in sales due to a price increase or increased sales volume? Dividing these sales figures by the wholesale price index for the corresponding year, say 115.2 and 111.8, we get 2.17 million for 1959 and 1.88 million for 1958. Thus we find that the increase in sales volume was really just 15 per cent.

The researcher may apply indexes in measuring sales performance, comparing his own company's trend with that of the industry. The indexes are also used in defining sales targets, setting prices, or, in combination with other data, to construct a company index.

Whatever the application of the index, it is essential that it be related to the researcher's problem. Arithmetical manipulation of an ill-chosen index leads to delusions of accuracy. Thus the technicians will want to review carefully the definition and construction of the index.

The purpose of the Consumer Price Index is to measure the average change in price of goods and services purchased by families of average wage earners and clerical workers living in urban areas. It does this by comparing the total amounts of money required to purchase the "market basket" the average family bought in 1952. Currently the market basket is a shopping list including approximately three hundred commodities and services. To determine this list of consumer purchases, the Bureau of Labor Statistics conducted a sample survey of consumer expenditures in 1950. The sample was of families living in 91 cities, selected to represent all city sizes. Each sample family reported kinds of items, amounts and expenditures for all goods and services purchased. The survey averages, after adjusting prices to agree with the base period, were used as the basic 1952 market basket. Periodic surveys determine the current price of each item in the basket. These are weighted according to their share of the total amount and the price changes are reflected in the Index.

Note that the Consumer Price Index makes no provisions for changes in level of living or new products on the market. Thus this index does not measure cost of living, but rather what the worker would spend to maintain his 1952 level of living. Changes in his purchasing habits, such as substituting filet mignon for hamburger, or color TV for black and white, cannot be reflected in the Consumer Price Index unless the shopping list is revised. The Bureau of Labor Statistics is now working on the revision of the Index. Plans are being made for a 1961 dwelling unit survey from which a sample of households can be selected. A new survey of family income and expenditure will then be conducted, and the shopping list revised accordingly. No doubt the market basket produced will contain a number of new items.

Like most current federal index numbers, the Consumer Price Index uses the average price levels for the three year period 1947-1949 as the standard reference base. Recently the government announced the establishment of a new base for all their general purpose index numbers. Beginning in January 1962, the indexes will be based on the three year period 1957-1959, with all numbers in the series converted to the new base. As the change goes into effect, a full explanation of the techniques used in revising each series will be made available by the Department of Commerce.

RESEARCH IN REVIEW

GWYN COLLINS, THORNTON C. LOCKWOOD and GEORGE M. SHIREY
ARF Research Associates

Basic Math for Big Problems

Robert S. Weinberg. *An Analytical Approach to Advertising Expenditure Strategy.* New York: Association of National Advertisers Inc., 1960, $2.50 to ANA members, $5.00 to non-members.

Many texts, articles, and speeches have in recent years urged the businessman to phrase his problems mathematically. The profit in such an approach, he is told, is twofold: first, many implicit assumptions are made explicit and quantified; second, powerful mathematical methods often provide easy formulations and quick solutions to complex questions. But too often it seems that the level of mathematical sophistication which pays off in business is difficult to attain.

Mr. Weinberg would not agree. His book is largely a primer on the application of elementary mathematics to advertising appropriations. In it he strives to show how even a little mathematics can go a long way in attacking this problem.

Nothing more difficult than a logarithm, a derivative, or a first difference appears in these pages. Yet it is not an easy book to read nor are its central principles easy to isolate. Perhaps this is so because Mr. Weinberg has chosen to stress at every stage business statistics rather than theoretical principles.

An introductory section of the book describes the various influences which affect a company's orientation toward advertising appropriations. The main body of the book is then concerned with the computation of optimum advertising budgets from hypothetical company positions. The book concludes with some remarks on the uses of mathematical models in market planning.

As an aid to the advertiser, the book stands or falls by its success in offering a method of computing optimum advertising budgets. Here Mr. Weinberg makes a strong case for planning appropriation levels in terms of what they may be expected to produce rather than in some arbitrary way. However, in an effort to make the argument as general as possible, he has been driven to an academic terminology which will lose him some of those readers he would most wish to reach. Moreover, he has used a great many symbols, some with subscripts, some with asterisks and some with both, and this makes one section in the middle of the book look like *War and Peace* in symbolic logic. Happily, as in *War and Peace,* a great many of the characters soon disappear never to be seen again.

To those who overcome these difficulties, Mr. Weinberg explains how a company's past experience can guide its future advertising decisions. He illustrates his method with hypothetical company statistics which serve not only to clarify the text but which indicate what kinds of information he considers important.

Briefly the method is as follows. Determine for each of several past years the ratio of the company's advertising expenditure to that for the rest of the industry. Call this the advertising ratio. Similarly compute the ratio of company sales to sales for the rest of the industry for each of these years. Call this the sales ratio. Divide the advertising ratio by the sales ratio to get the advertising exchange rate.

Now graph the logarithm of the advertising exchange rate for each year against the change in share of market experienced in that year. In the case described, the resulting points lie neatly on a straight line. This line then shows the change in market share which would probably result from different advertising exchange rates.

This computation requires a knowledge of shares of market and industry advertising expenditures in past years as well as good estimates of total industry

---

These signed opinions do not necessarily reflect the views of the ARF, its board of directors or any of its committees. Publications described may be ordered through the ARF, or directly from their respective publishers.

sales and advertising levels for at least one future year. Advertisers will also need the good fortune of the book's hypothetical companies in obtaining a simple relationship between advertising exchange rates and changes in market share. Since these companies are said to have been modeled after the experience of fourteen real firms with which Mr. Weinberg has consulted, such good fortune may not be too rare.

The chief virtue of this book lies less in the specific method it describes than in the kind of approach it encourages. Mr. Weinberg has done a great service in showing how the complex problem of appropriations can be attacked with quite simple tools. He will no doubt stimulate many advertisers to try their own variations and elaborations of his method. His book is a mathematical missionary work; it is sure to find many converts.

—GWYN COLLINS

30 Views of the Corporate Image

Lee Bristol (Editor). *Developing the Corporate Image.* New York: Charles Scribners Sons, 1960, $5.95.

Lee Bristol has compiled the first comprehensive source of information on the corporate image, a series of 30 articles by specialists in the field. It is divided into four sections: preparing to meet the problem; the faces of the image; tools, techniques and media; and where do we go from here.

In the first section Pierre Martineau of the Chicago Tribune says the corporate image is analogous to the individual personality: most people like or dislike corporations for the same reasons they are attracted to or repelled by other persons. People, he also reminds us, react not to reality, but to their subjective knowledge of reality.

Charles Winick of J. Walter Thompson, in "How To Find Out What Kind of Image You Have," stresses the importance of knowing not only whether a respondent is favorably or unfavorably disposed toward a company (direction), but also how strongly he holds his attitudes (intensity), and how central the particular attitude is to him (salience). He reviews three research approaches: projective tests, open end questions, and objective questions.

The second section portrays the various publics a corporation may want to reach. Of its eleven articles, most readers will be interested in those dealing with such basic publics as employees (by William Brennan of Johnson & Johnson), the community (by John McCarty of General Electric), the stockholder (by John C. Bogle of Wellington Fund) and distributors and dealers (by Hector Lazo of New York University).

The most basic public of all, consumers, is considered in only two chapters and then only as customers of women's specialty stores (Jerome Klein) and electric companies (Dwight C. Van Meter). Five other chapters discuss specialized images: "The Image of a Publication" by Charles Swanson; "Your Company's Place on the Big Board" by G. Keith Funston; "The Image and Your Financing" by Edward J. Lauesen; "The Image and Schools and Women's Clubs" by Sally Dickson and Joyce Clarke; and "The Image and Politics" by Bert C. Goss.

Having described the problem and the publics, the book turns to tools, techniques, and media—which might be expected to be the heart of the book. Unfortunately the three are not distinguished, and there are few examples of specific techniques. Exceptions are Peter Schladermundt's chapter which cites case histories on insignia, trademarks, logotypes, and colophons, and Fred Manchee's answers to six questions frequently asked about institutional advertising. The latter is an excellent basic discussion and would have been more appropriate in the introductory section.

The last section consists of a chapter on image evaluation by Robert Williams of Alfred Politz Research, and the editor's summary. Dr. Williams concludes that research does not in itself lead to decision. Research, he says, must rise above the level of mere description and offer positive suggestions, either to adapt to best use the existing image, or change the image to support actions the company must (or desires to) take.

Mr. Bristol's approach of calling on experts in various fields has resulted in some chapters too specialized for general use. Organizing articles into a book is always difficult, and in this case has been done at the expense of making sections two and three unnecessarily repetitious. More collaboration between contributors might have combined these sections to give more examples of corporate images designed for specific groups.

"Developing the Corporate Image" is an introduction to its subject rather than a text from which one can design a corporate image policy. But as a single volume which defines the corporate image, describes different publics, and suggests research approaches, it is a firm step in the right direction.

—GEORGE M. SHIREY

Of Marketing, Models & Managers

David W. Miller and Martin Starr. *Executive Decisions and Operations Research.* Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1960.

This book is divided into four parts: the executive and decisions, operations research and decision, decision-problem paradigms, and the executive and operations research.

The first part describes at some length the managerial function and introduces a good deal of terminology. The second part describes conceptually how some elementary mathematics can be applied to managerial situations. The third part actually illustrates the employment of OR techniques in marketing, in production, and in administration. The fourth part of the book aims to provide a general description of those techniques now labelled as operations research, as well as to put operations research in a proper managerial context.

The marketing or advertising research man will soon turn to Chapter 9, headed "Of Marketing." Mathematically untrained readers will derive a new terminology rather than new methods from this section. The discussion of models describing brand switching and brand loyalty, for example, will probably suggest some new approaches, though the algebra will throw the unsophisticated and may annoy the sophisticated. The treatment of media selection will give aid and comfort to those who evaluate advertising in terms of advertising exposures, since the discussion is phrased in that way. It may, however, disappoint some media researchers to see how easily an oversimplification of the problem can be phrased in awkward mathematics.

Other parts of this chapter discuss optimizing the effect of the advertising message, pricing, and, more lengthily, competitive bidding.

Each of these subjects is important for the advertising and marketing executive, who, unfortunately, will get little assistance from this book. The description of the problem in each case will appear inadequate to those whose daily business it is to make decisions in these areas. On the other hand the mathematical model tends to arrive at conclusions too suddenly and without careful rationalizations.

Both the title of this book and the preface point out that it is aimed primarily at the executive. The authors claim that "only a minimum of mathematics is utilized. Those who lack extensive formal training in mathematics can get from this book the insights presently available only from highly technical treatments of operations research." This reviewer was more impressed with the capacity of this book to persuade mathematicians to enter business. They should both welcome the diversity of problem areas discussed and nod understandingly over such phrases (there are many) as "the . . . equation . . . can be solved by the methods of algebra."

—GWYN COLLINS

Sequential Analysis Revisited

Lawrence Myers, Jr. and Eric F. Gardner. An Inexpensive Method to Determine the Efficiency of a Television Program. *Journal of Applied Psychology*, Vol. 44, No. 1, February 1960, pp. 39-42.

The title of this paper is somewhat misleading in several respects. First, there is a suggestion that the paper is concerned with the actual *effect* of a TV program. Actually, the authors discuss the familiar cost per thousand homes concept. Then there is the implication that the assessment provided is of a TV program as a whole, whereas the paper deals with cost per thousand homes at a moment in time. These costs, it does not "determine," as the title suggests, except by indicating that they are above or below a certain fixed level or within some specified range. Inexpensive, however, the method certainly is, for it relies entirely on telephone interviews.

The method and concept, which the authors describe as new, is that of sequential analysis. Many of us will be familiar with that excellent practical description of it, "Sequential Analysis: A New Tool for Research" in Professor Ferber's *Statistical Techniques in Market Research* published eleven years ago. The more mathematically minded of our community would have known of it some four years earlier.

The method consists of setting up hypotheses about the data, in this case the cost per thousand viewers, before conducting the survey. At the same time the researcher decides what risk of a false conclusion he will permit himself. This done he can construct a decision table or chart and start collecting his information. His interviews are then taken serially in such a way that at every stage a random sample of respondents are interviewed. From the decision table or chart the researcher can often see that his initial hypotheses have been violated at some stage of the interviewing. He can then stop interviewing and save his money.

In practice random samples at all stages of in-

terviewing are usually difficult to arrange. Similarly, it can be awkward to stop all interviewing suddenly mid-morning. For this reason, the method has not been much applied in social and market research, except in telephone surveys such as that outlined in this paper.

Professors Myers and Gardner have shown us once more how much those in commercial and academic life have to learn from one another.

—GWYN COLLINS

The Ones Who Don't Answer

Marjorie N. Donald. Implications of Nonresponse for the Interpretation of Mail Data. *Public Opinion Quarterly*, Vol. 24, No. 1, Spring 1960, pp. 90-114.

In personal interview research, Politz and Simmons[1] have described a procedure for assigning weights to respondents in terms of their recent "at homeness." Nonresponse in mail interview research is more difficult to handle because no single, easily measured factor like "not-at-homeness" accounts for so much nonresponse.

The purpose of this study was to investigate the internal functioning and effectiveness of local units of the League of Women Voters. A secondary purpose was to compare responders to four response waves in terms of their involvement in the League, nonresponse to specific questions, and certain demographic characteristics. The fourth wave consisted of respondents who, when telephoned and offered a fourth questionnaire, accepted the offer. The possibilities of this technique will interest practitioners who seek a high return rate.

The word "implications" correctly reveals the scope of the author's analysis. Characteristics of nonresponders to the four waves were largely uninvestigated. In some studies, characteristics could possibly be inferred from the response pattern. This the author sets out to do, but weakens her case by confining the analysis to successive waves. While she reports statistically significant differences between waves 1 and 2, 2 and 3, and the relatively few differences between waves 3 and 4, differences between waves 1 and 3, 1 and 4, and 2 and 4 receive little or no attention. This is a serious oversight. Although the results seem to approximate stability between the third and fourth waves, these respondents differed substantially from those responding in the first two waves.

This leaves open to question the author's conclusion that with so little difference between third and fourth waves, the expensive telephone follow-up did not add significantly to the information obtained from the study. The telephone interview did add significantly to the study, in that it suggests a higher completion rate to ensure proper representation in the sample of income, education, duration of membership, degree of participation, and similar parameters exhibiting doubtful stability. Stability between two response waves is no substitute for proper representation.

Although cautioning the reader against generality of results, the author states: "If records on attitudinal data are kept over time, as questionnaires are returned, the curve produced may indicate a cutting point beyond which persistence merely brings more of the same, or will tap the potentially unfavorable, or uninvolved, section of the sample." The mail researcher may be excused if he concludes that even though the last two successive waves show similarity, he can only *hope* that the same kinds of respondents would be obtained if interviewing were continued. Eliminating "more of the same," unfavorable or uninvolved members of the sample could produce bias.

An interesting point is that the amount of nonresponse to specific items increased as the respondent turned from reporting for herself to estimating behavior of others and giving judgments about the League's organizational functioning.

A brief review of six published articles precedes Dr. Donald's thesis that with greater personal involvement, fewer stimuli are required to elicit a response. Despite some unexplored considerations, the author's detailed and thoughtful analysis of a rarely treated topic should be welcomed by mail researchers.

—THORNTON C. LOCKWOOD

[1] Alfred Politz and Willard Simmons, "An Attempt to Get the 'Not-at-Homes' into the Sample Without Callbacks," *Journal of the American Statistical Association*, Vol. 44, No. 245, March 1949, pp. 9-36.

Found: Patterns in Panel Purchases

A. S. C. Ehrenberg. The Pattern of Consumer Purchases. *Applied Statistics—A Journal of the Royal Statistical Society*, Vol. 8, No. 1, March 1959, pp. 26-41.

A. S. C. Ehrenberg. A Study of Some Potential Biases in the Operation of a Consumer Panel. *Applied Statistics—A Journal of the Royal Statistical Society*, Vol. 9, No. 1, March 1960, pp. 20-27.

In these two papers Mr. Ehrenberg draws on his experience with the Attwood Group, which con-

ducts consumer panels in many countries of Western Europe. These papers are thus based on information collected in many product fields and in several different countries.

The more recent paper investigates two possible sources of bias in consumer panels. The first, the length of time the respondent has been in the panel, appears to have no significant influence on reported brand shares or reported frequency of purchase. Mr. Ehrenberg admits a possible "warm-up" bias for new panel members, though he has no evidence to present one way or the other on this subject. The second source of bias, the amount of information collected from panel members, seems equally non-significant, at least for respondents who have been reporting for several months and who are asked to report on 50 product groups instead of their usual 30.

Reassured, we turn to Mr. Ehrenberg's earlier and more significant paper. In it he shows that a definite pattern exists in the proportions of people who buy various quantities of a product during a fixed time period. From this apparently arid finding we can draw a number of interesting and useful inferences using readily available data.

For if the distribution showing the proportion of people buying none, one, two, three, etc., units of the product during a given period corresponds to some particular curve, then, had we known the curve, we could have predicted the frequency distribution. Different products and time periods give rise to different curves, but Mr. Ehrenberg shows that for a wide variety of products and with only mild restrictions on the time period, the curves are all members of the negative binomial family.

This family of curves is easily represented mathematically: each curve is entirely described by two constants. In practice, the particular member of the family which fits a given set of data can be determined when we know any two independent facts about the frequency distribution.

The curve can also be fitted if we know only the proportions of people who bought the product during two time periods of different lengths. For instance, from a recent *Milwaukee Journal* study which reports the per cent purchasing within the past seven and thirty days, we are able to compute —for certain products not bought in large quantities—both the average amounts purchased and rates of buying.

In the past the negative binomial distribution has received attention in attempts to predict the number of deaths resulting from repeated outbreaks of a disease and in studies of accident proneness. Its application to the less tragic circumstances of consumer purchase should be even more widespread and profitable.

Mr. Ehrenberg also discusses the effect of trends in the purchasing pattern, the effect of changes in the sample from whom the data have been derived, and more besides. These are important papers of immediate practical utility.

—GWYN COLLINS

BRIEFLY NOTED

Russell L. Ackoff. Unsuccessful Case Studies and Why. *Operations Research*. Vol. 8, No. 2, March-April 1960, pp. 259-263.

Defining an unsuccessful OR study as "one in which there was partial or complete failure [of the client] to implement findings," Mr. Ackoff reviews 48 such studies done by the OR group at Case Institute of Technology since 1951, and finds four main reasons for lack of such success:

1. Reorganization of the company, which changes the persons responsible for the operations under study.
2. Lack of involvement of a high enough level of management to enforce interdepartmental coordination.
3. Attempts by individuals to capture the research so that it can be used to serve some personal, rather than organizational objectives.
4. Economic pressures that lead to a general reduction of expenditures for outside services.

He offers five rules by which OR practitioners may cope with these difficulties:

1. Do not ever sign a contract you cannot break.
2. Never report to anyone lower than the authority capable of controlling all the functions involved in a study.
3. Never report to the responsible authorities through intermediaries.
4. Never fail to complain forcibly to management about undesirable research conditions.
5. Never perform research for anyone at no cost to him.

Stephen Paranka. Marketing Predictions from Consumer Attitudinal Data. *Journal of Marketing*, Vol. 25, No. 1, July 1960, pp. 46-51.

Have attitudinal data accurately predicted changes in direction of consumer expenditures, of total sales of consumer durable goods, and of specific consumer durables? Sometimes yes, sometimes no says the author, and introduces some evidence

favoring a short predicting interval between measures. He discusses data obtained by the Survey Research Center of the University of Michigan, the Federal Reserve Board, and the *Newsweek* Survey sponsored by the National Industrial Conference Board. Citing the work of several writers, the author concludes that attitudinal data are more useful in supplementing other forecasts than in predicting the magnitude of change, and indicates that further refinements are needed to increase their usefulness.

Lee Adler. Phasing Research Into the Marketing Plan. *Harvard Business Review*, Vol. 38, No. 3, May/June 1960, pp. 113-122.

Mr. Adler argues that if market research is to serve management better and obtain a more important role in business, it must not restrict itself to short term needs but must develop long range programs. It is important that market researchers be able to define goals, required action, and timing of each long range program proposed. The author cites several examples of the types of program market researchers should be undertaking.

Henry L. Munn. Brand Perception as Related to Age, Income, and Education. *Journal of Marketing*, Vol. 42, No. 3, January 1960, pp. 29-34.

This study attempts to determine whether perception of a brand within a product class depends on consumer income, education, or age. Products studied were: low-priced automobiles, non-instant coffee, television sets, and cigarettes. Results show that for the brands studied, perception of them was largely independent of socio-economic factors.

Harry A. Burdick, Edward J. Green and Joseph W. Loveland. Predicting Trademark Effectiveness. *Journal of Applied Psychology*, Vol. 43, No. 5, October 1959, pp. 285-286.

"How effective is a given trademark in comparison to six competitive trademarks?" Using a tachistoscopic device, the relative effectiveness of each trademark was evaluated in terms of: salience (readily seen and recognized), meaningfulness (conveys favorable and significant connotations), memory value (readily remembered). These factors were found to be positively correlated.

W. F. F. Kemsley. Designing a Budget Survey. *Applied Statistics—A Journal of the Royal Statistical Society*, Vol. 8, No. 2, June 1959, pp. 114-123.

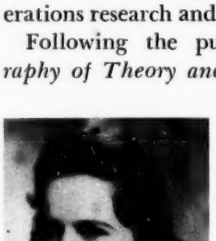
The author discusses the design of a survey to obtain information on consumer expenditures. Since most families do not keep complete budgets, he recommends the use of diary by a sample of households. The article describes some of the difficulties in obtaining accurate reports from the diary method, and lists six areas the field worker should check for accuracy.

PUBLICATIONS RECEIVED

MARY E. MCMAHON
ARF Librarian

Our library was established in 1953 for the benefit and use of ARF members and staff. Of necessity, it is highly specialized. The collections include primarily materials on advertising research, copy research, marketing research, media research, operations research and motivation research.

Following the publication of ARF's *Bibliography of Theory and Research Techniques in the Field of Human Motivation* in 1956, 507 of the 518 titles it mentioned—many of them out of print or unavailable at local libraries—were added to our library, making it one of the most comprehensive motivation research collections in the world. More recently, with the compilation of ARF's *Sources of Published Advertising Research*, we have again gathered as many of the items listed as are still available.



Through inter-library loans, we are glad to offer our members any of these books, research reports, or ARF publications for four weeks. Requests should be submitted in writing.

Extensive clipping files are maintained on various research topics; members may refer to these files at ARF headquarters.

The reports listed below were acquired from January 1, 1960 to the present time. They are now on file at ARF; however, permanent reference copies may be obtained directly from the publishers.

Advertising Checking Bureau, *Newspaper Advertising By Size of Ad and By Day of Week, A Study Prepared for the Bureau of Advertising*. New York: Bureau of Advertising, May 1960. 15pp. Free.

Alderson Associates, Inc., *6th Du Pont Consumer Buying Habits Study: The Shopper and the Supermarket*. Wilmington, Delaware: E. I. du Pont de Nemours & Co. (Inc.), 1959. 14pp. Free.

Alderson Associates, Inc., *6th Du Pont Consumer Buying Habits Study: Today's Buying Decisions.* Wilmington, Delaware: E. I. du Pont de Nemours & Co. (Inc.), 1959. 12pp. Free.

The American Weekly, *The American Weekly Family.* New York: The American Weekly, January 1960. 24pp. Free.

Audits and Surveys Company, Inc., *Household Possessions and Ownership, Based on "Household Audiences of the Major Weekly Magazines."* New York: Cowles Magazines, Inc., 1960. 34pp. Free.

Audits and Surveys Company, Inc., *Look National Appliance Survey, Volume One—Major Household Appliances.* New York: Cowles Magazines, Inc., 1959. 327pp. Free.

Audits and Surveys Company, Inc., *Look National Appliance Survey, Volume Two—Portable Household Appliances.* New York: Cowles Magazines, Inc., 1959. 116pp. Free.

Batten, Barton, Durstine, Osborn, Inc., *The Female Influence in Automotive Purchases.* New York: BBDO, 1959. 23pp. Free.

Bingham, Walter Van Dyke and Bruce Victor Moore, *How to Interview,* (4th Revised Ed.), prepared with the collaboration of John W. Gustad. New York: Harper & Brothers, 1959. 277pp. $4.50.

Boyd, Harper W., Jr. and Ralph L. Westfall, *An Evaluation of Continuous Consumer Panels as a Source of Marketing Information.* Chicago: American Marketing Association, 1960. 20pp. $1.00 to AMA members; $2.00 to non-members.

Britt, Steuart Henderson, *A Study on the Drive-In Theatre Audience.* Chicago, Illinois: Theatre-screen Advertising Bureau, April 1960. 14pp. Free.

Bruskin, R. H. Associates, *Daytime Rendezvous . . . With the Women Who Buy.* New York: National Broadcasting Company, Inc., November 1959. 21pp. Free.

Bruskin, R. H. Associates, *Selling Hard Goods on NBC Daytime Television.* New York: National Broadcasting Company, Inc., December 1959. 12pp. Free.

Bruskin, R. H. Associates, *Special Report: Advertising Effectiveness of an NBC Special.* New York: NBC Research, June 1960. 24pp. Free.

Chicago Tribune Research and Marketing Division, *The Used Car Market.* Chicago: Chicago Tribune Advertising Department, undated. 19pp. Free.

Churchman, C. West and Philburn Ratoosh (Editors), *Measurement: Definitions and Theories.* New York: John Wiley & Sons, Inc., 1959. 274pp. $7.95.

Consolidated Consumer Analysis Newspapers, *1960 Consolidated Consumer Analysis: Buying Habits and Brand Use in 21 Great Markets.* Consolidated Consumer Analysis Newspapers, 1960. 126pp. Free.

Cort, David, *Is There an American in the House?* New York: The Macmillan Company, 1960. 304pp. $3.95.

[1]Crossley, S-D Surveys, Inc., *Parallel Mail and Personal Interview Studies of "U. S. News & World Report" Subscribers in Cleveland, Ohio.* New York: Market Research Division, U. S. News & World Report, June, 1960. 128pp. Free.

[1]Crossley, S-D Surveys, Inc., *A National Mail Study of "U. S. News & World Report" Subscribers, Vol. II.* New York: Market Research Division, U. S. News & World Report, June, 1960. 57pp. Free.

[1] Done in consultation with the ARF.

Dell Modern Group, *21st Survey of Beauty.* New York: Dell Publishing Co., Inc., 1960. 111pp. Free.

Dolva, Wenzil K., (Editor), *Marketing Keys to Profits in the 1960's.* Chicago: American Marketing Association, 1960. 599pp. $5.00 to AMA members; $7.50 to non-members.

Enders, John W., *Who's Who in the Audience.* New York: Playbill, Inc., 1959. 12pp. Free.

Erdos and Morgan Research Service, *A Twenty Company Study on Duplication and Readership Among Publications Serving the Petroleum Industry.* Tulsa, Oklahoma: Oil and Gas Journal, June 1960. 64pp. Free.

Fawcett Women's Group, *19th Annual Fawcett Beauty Reader Forum.* New York: Fawcett Publications, Inc., 1960. 51pp. Free.

Ferber, Robert, *Collecting Financial Data by Consumer Panel Techniques: A Pilot Study.* Urbana: Bureau of Economic and Business Research, University of Illinois, 1959. 177pp. $2.50.

Gerson, Walter and Associates, Inc., *Prospect Exposure in Newspaper Advertising.* Richmond: Richmond Newspapers, Inc., 1960. 20pp. Free.

Good Housekeeping, *Beauty Secrets Trends, 1955-1959: A Compilation of Product Usage Data.* New York: Good Housekeeping Magazine, 1960. 33pp. Free.

Good Housekeeping, *Consumer Panel Photography Report.* New York: The Hearst Corporation, 1960. 43pp. Free.

Grubbs, Violet Davis, Hugh M. Smith, Paul Wischkaemper and Nick Havas, *Effectiveness of Selected Canned Food Displays in Supermarkets.* Washington: Agricultural Marketing Service, U. S. Department of Agriculture, November 1959. 30pp. 20¢.

Hall, The Lloyd H. Co., *Buying Patterns of the Bride-To-Be: Summary of a Research Project Conducted for Modern Bride by The Lloyd H. Hall Co.* New York: The Ziff-Davis Publishing Company, 1959. 29pp. Free.

Hooper, C. E., Inc., *A Comparative Study of Women's Preference for 5 Magazines.* Philadelphia: The Curtis Publishing Company, 1960. 23pp. Free.

Hopf, Howard E. and Raymond T. Bedwell, Jr., *Characteristics and Program Preferences of Television Listeners in Columbus, Ohio, April 1959.* Columbus: Department of Speech, Ohio State University, November 1959. 10pp. Free.

Hopf, Howard E. and Raymond T. Bedwell, Jr., *Listener Availability and Radio News and Music Preferences in Columbus, Ohio, April 1959.* Columbus: Department of Speech, Ohio State University, November 1959. 9pp. Free.

Horton, Robert W., *To Pay or Not To Pay—A Report on Subscription Television.* New York: Center for the Study of Democratic Institutions, 1960. 12pp. Free.

Hovland, Carl I. and Irving L. Janis, (Editors), *Personality and Persuasibility.* New Haven: Yale University Press, 1959. 333pp. $5.00.

Institute for Motivational Research, Inc., *The Inter-Relationship Between Family Circle and Its Readers.* New York: Everywoman's Family Circle Magazine, June 1960. 10pp. Free.

Institute for Motivational Research, Inc., *Memorandum on Believability in Advertising.* Croton-on-Hudson, New York: Institute for Motivational Research, Inc., January 1960. 19pp. Free.

Judd, Robert C., *Buying Decision Survey, April 1960 in the Television Exchange Area of Beloit, Wisconsin.* Beloit: The Beloit Daily News, 1960. 12pp. Free.

Judd, Robert C., *Second Annual Consumer Buying Habit Survey of Beloit, Wisconsin.* Beloit: The Beloit Daily News, 1960. 46pp. Free.

Juster, F. Thomas, *Consumer Expectations, Plans, and Purchases: A Progress Report.* Occasional Paper 70. New York: National Bureau of Economic Research, Inc., 1959. 174pp. $2.50.

Katona, George, *The Powerful Consumer: Psychological Studies of the American Economy.* New York: McGraw-Hill Book Company, Inc., 1960. 276pp. $6.50.

Lewis, Don, *Quantitative Methods in Psychology.* New York: McGraw-Hill Book Company, Inc., 1960. 558pp. $9.50.

Lippitt, Vernon G., *Determinants of Consumer Demand for House Furnishings and Equipment.* Cambridge: Harvard University Press, 1959. 172pp. $6.00.

Market Psychology, Inc., *Parade and Other National Publications As Seen By Parade Readers: A Study in Four Cities—Executive's Summary of Major Findings.* New York: Parade, 1960. 18pp. Free.

Market Research Corporation of America, *The Profitable Difference: A Study of the Magazine Market . . . Its Size, Quality, and Buying.* New York: The Magazine Advertising Bureau of the Magazine Publishers Association, Inc., 1960. 277pp. Free.

Miller, David W. and Martin K. Starr, *Executive Decisions and Operations Research.* Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1960. 446pp. $11.00.

[1]Milwaukee Journal, *Consumer Analysis, 1960 Edition.* Milwaukee: The Journal Co., 1960. 190pp. Free.

Minneapolis Star and Tribune Research Department, *Minnesota Homemaker Survey No. 12.* Minneapolis: Minneapolis Star and Tribune Company, 1959. 113pp. Free.

NBC Research, *Prospectivity . . . How to Influence the Total Car-Buying Public.* New York: National Broadcasting Company, Inc., June 1960. 104pp. Free.

NBC Spot Sales, *NBC Spot Sales Timebuyer Opinion Panel Report, Number 6 on Station Public Service Programming.* New York: NBC Spot Sales, April 1960. 35pp. Free.

Nowland and Company, Inc., *The Service Station Customer.* Midland, Michigan: The Dow Chemical Company, 1959. 25pp. Free.

[1] Done in consultation with the ARF.

Opinion Research Corporation, *Motivations Related to Pleasure Travel in Europe: A Pilot Study for European Travel Commission, Holiday Magazine, Time Magazine.* Princeton, New Jersey: Opinion Research Corporation, August 1959. 64pp. Free.

Organisation for European Economic Co-operation, *Market Research on a European Scale.* Paris: The European Productivity Agency of the Organisation for European Economic Co-operation, June 1960. 136pp. $2.00.

Packard, Vance, *The Waste Makers.* New York: David McKay Company, Inc., 1960. 327pp. $4.50.

Politz, Alfred Media Studies, *1d Page Exposure In 4 Magazines: Audience; Issue Exposure; Ad Page Exposure; Frequency of Ad Page Exposure.* New York: Reader's Digest/Saturday Evening Post, 1960. 132pp. Free.

Politz, Alfred Media Studies, *Advertising Exposure: Audiences, Issues and Advertising Pages—Reader's Digest, Saturday Evening Post, Life, Look.* Volume No. 1. Pleasantville, New York: The Reader's Digest Association, Inc., 1960. 83pp. Free.

Politz, Alfred Media Studies, *Advertising Exposure In Combination of Four Magazines: Reader's Digest, Saturday Evening Post, Life, Look; Pairs, Trios, Quartets; Audiences, Issues and Advertising Pages.* Volume No. 2. Pleasantville, New York: The Reader's Digest Association, Inc., 1960. 26pp. Free.

Politz, Alfred Media Studies, *A Study of Outside Transit Poster Exposure.* New York: National Association of Transportation Advertising, Inc., 1959. 25pp. Free.

The Progressive Farmer, *Cosmetics, Toiletries and Drugs Used by Southern Farm Families.* Birmingham, Alabama: The Progressive Farmer, 1959. 65pp. Free.

The Pulse Incorporated, *The WHDH Audience.* Boston: WHDH, undated. 14pp. Free.

Reach, McClinton & Company, Inc., *Reach/McClinton Guarantee Survey.* New York: Good Housekeeping Magazine, 1960. 7pp. Free.

Reader's Digest, *Inside Test City U. S. A.* Pleasantville, New York: The Reader's Digest Association, 1959. 54pp. $2.00.

Reader's Digest Research Department, *Characteristics of Reader's Digest Primary Households and Readers, (Audience Booklet No. 7), Highlights and Projections from 1959 Starch Consumer Magazine Report.* Pleasantville, New York: The Reader's Digest Association, November 1959. 100pp. Free.

Reader's Digest Research Department, *Characteristics of Reader's Digest Primary Households and Readers, Metropolitan N. Y. Edition, (Audience Booklet No. 1), Highlights and Projections Based on a Special Tabulation of the 1959 Starch Consumer Magazine Report.* Pleasantville, New York: The Reader's Digest Association, January 1960. 27pp. Free.

Reader's Digest Research Department, *Characteristics of Reader's Digest Primary Households and Readers, Western Edition, (Audience Booklet No. 3), Highlights and Projections Based on a Special Tabulation of the 1959 Starch Consumer Magazine Report.* Pleasantville, New York: The Reader's Digest Association, January 1960. 28pp. Free.

Redbook Magazine, *Redbook Magazine's 1959 Beauty Survey.* New York: Redbook Magazine, 1959. 75pp. Free.

Roper, Elmo, *The Public's Reaction to Television Following the Quiz Investigations.* New York: Television Information Office, 1960. 32pp. Free.

[1]Roper, Elmo and Associates, *A Study Among Certain Buyers of Woman's Day.* New York: Fawcett Publications, Inc., February 1960. 62pp. Free.

Sargent, Hugh W., *Consumer-Product Rating Publications and Buying Behavior.* Urbana: The University of Illinois, 1959. 80pp. $1.50.

Sheehan, James G., *The Impact of Planned Shopping Centers on the Metropolitan Cincinnati Market.* Cincinnati: The Cincinnati Enquirer, 1959. 94pp. Free.

Sindlinger & Company, *The Characteristics of the Reading Audiences of Newsweek, Time and U. S. News & World Report.* New York: Newsweek, 1959. 24pp. Free.

Smith, Wilbur and Associates, *The Wilbur Smith Study of Outdoor Advertising, Sponsored by Outdoor Advertising Association of America, Inc.* New York: Outdoor Advertising Incorporated, 1960. 47pp. Free.

Social Research, Inc., *TV Guide—A Study in Depth: A Condensation of the Report on the Magazine's Meaning, Function, and Its Reader Reactions.* Radnor, Pa.: TV Guide Magazine, 1960. 18pp. Free.

Social Research, Inc., *TV Guide—A Study in Depth: The Magazine's Meaning, Function, and Its Reader Reactions.* Radnor, Pa.: TV Guide Magazine, 1960. 52pp. Free.

[1] Done in consultation with the ARF.

Starch, Daniel and Staff, *Newspaper Coverage of San Antonio Households.* San Antonio, Texas: The Light, 1959. 17pp. Free.

Starch, Daniel and Staff, *A Study of San Antonio Newspapers.* San Antonio, Texas: The Light, 1959. 29pp. Free.

Television Bureau of Advertising, Inc., *The Changing Face of Magazines.* New York: TvB, January 1960. 41pp. Free.

Television Bureau of Advertising, Inc., *The Woman In Your Life . . . A Daytime Rendezvous.* New York: TvB, April 1960. 39pp. Free.

WKJF-FM, *Qualitative Audience Survey,* September 1959. Pittsburgh: WKJF-FM, 1959. 8pp. Free.

Weidenhamer, Margaret, *Selected Data on Women's Attitudes Toward Cotton and Other Fibers in Clothing.* Washington: Agricultural Marketing Service, U. S. Department of Agriculture, June 1960. 15pp. Free.

Weinberg, Robert S., *An Analytical Approach to Advertising Expenditure Strategy.* New York: Association of National Advertisers, Inc., 1960. 125pp. $2.50 to ANA members; $5.00 to non-members.

Weiss, E. B., *The New Era of the Sophisticated Shopper.* New York: Doyle Dane Bernbach, Inc., 1960. 63pp. Free.

The success of language in conveying information is vastly overrated, especially in learned circles.

—ALFRED NORTH WHITEHEAD

Science in Wonderland

"Now I'll give you something to believe (the Red Queen said). I'm just one hundred and one, five months and a day."

"I can't believe that!" said Alice.

"Can't you?" the Queen said in a pitying tone. "Try again: draw a long breath, and shut your eyes."

Alice laughed. "There's no use trying," she said: "One can't *believe impossible things."*

Nothing surprises. The impossible takes a little longer, and yesterday's science fiction is today's fact. Yet science falters when it seeks to analyze the commonplace phenomenon of men talking to men.

Somehow communication has become the game preserve of the griffin and the unicorn, beautiful from afar, but indescribable at close range. Its commercial precinct, the business of advertising, remains (in Martin Mayer's analogy) the enchanted forest for which the trees of facts and principles cannot be seen. Who knows the return on his advertising investment? His optimum media combination? His right themes?

His need to know has rarely reached the level beyond which it must be satisfied. Now there are signs that this threshold is about to be crossed *en masse*. These signs are found not just in the economic fact that the cost of doing any business is increasingly the cost of marketing, but also in a psychological fact of growing importance.

The true hidden persuader, the consumer, has finally persuaded enough of us that he doesn't believe everything he's told in advertising. His healthy skepticism finds a curious resonance in the industry's acceptance of research. For if results were as easily known in advertising as in production, ill-mannered, profitless ads could be discarded as are faulty products from the assembly line. Quality control of advertising is today more likely than ever, partly because of consumer incredulity and partly because of the modest successes of real research.

Here the Red Queen began again: "Can you answer useful questions?" she said.

The most useful questions are always about future events. "What will happen to market share if we . . . ?" The task of the marketing scientist is the prediction of consumer behavior. His method is experimentation, the search for repeatable cause-effect links. He has begun to find them.

It is slow work. Seldom can it be described in the military terms popular in space technology. A problem is not attacked, but painfully translated into a set of answerable questions. There are no breakthroughs, only small decreases in the unexplained variance. Instead of final conquest, there will simply be better advertising decisions—measurably better.

If as in missiles, there is a gap in the race for knowledge, it is less among competitors than between them all and the man in the street. Now he has given notice that if advertising doesn't fill the gap, he will. His advertising preferences must be known as are his product preferences. Nothing would be more sadly ironic than if, by advertising's failure to investigate consumers, the reverse were to occur.

Scientists in marketing can help sooner if they may justify their work only against the criterion of successful prediction. Given this chance, the best advertising research will always sell itself on a dollar basis, and, at the same time, increase our total understanding of human behavior.

"What is *a Caucus-race?" said Alice.*

"Why," said the Dodo, "the best way to explain it is to do it."

—CHARLES K. RAMOND